Schedule A
(See Clause 2.1 and 8.1)
SITE OF THE PROJECT

1 The Site

1.1 Site of the Four-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.

1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.

1.4 The alignment plans of the project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the Contractor with minimum FRL as indicated in the alignment plan. The contractor, however, improve/upgrade the Road Profile as indicated in Annexure-III based on site/design requirement.

1.5 The status of the environment clearances obtained or awaited is given in Annex-IV.

Annex-I
(Schedule-A)
Site

1. **Site**
The Site of the Four-Lane Project Highway comprises the section of National Highway 37 commencing from Km 453.000 (Existing Km 453.000) to Km 490.800 (Existing Km 491.050) i.e. Jorhat- Near Jhanji section in the state of Assam. The land, carriageway and structures comprising the site are described below.

2. Land
The Site of the Project Highway comprises the landdescribed below:

Design Chainage (Km)		Total ROW (inm)	Remarks
From	To		
453.000	459.000	60	Jorhat
459.000	468.625	60	
468.625	469.025	120	Toll plaza at km 468.825
469.025	479.000	60	
479.000	481.000	60	Teok
481.000	487.000	60	
487.000	488.400	60	Jhanji
488.400	489.200	60	Realignment
489.200	490.800	60	

3. Carriageway

The existing carriageway consists of the following which are incomplete/partially complete and to be completed in all respect.

Road Work Under Construction Stage (partially complete)

A. Main Carriage Way:

Subgrade Widening Portion					
Sl. No.	Chainage (Km)		Length (Km)	Side	Status
	From	To			
1	453+800	455+400	1.600	LHS	Subgrade Completed
2	456+090	457+000	0.910	LHS	Subgrade Completed
3	459+570	460+450	0.880	LHS	Subgrade Completed
4	460+570	461+400	0.830	LHS	Subgrade Completed
5	464+300	466+100	1.800	LHS	Subgrade Completed
6	466+830	468+140	1.310	LHS	Subgrade Completed
7	468+190	468+550	0.360	LHS	Subgrade Completed
8	468+900	469+920	1.020	LHS	Subgrade Completed
9	473+520	473+900	0.380	LHS	Subgrade Completed
10	475+350	476+270	0.920	LHS	Subgrade Completed
11	476+300	476+400	0.100	LHS	Subgrade Completed
12	479+600	479+950	0.350	LHS	Subgrade Completed
13	469+800	470+120	0.320	RHS	Subgrade Completed
14	470+870	471+460	0.590	RHS	Subgrade Completed

15	471+500	472+710	1.210	RHS	Subgrade Completed
16	474+050	474+260	0.210	RHS	Subgrade Completed
17	474+290	474+520	0.230	RHS	Subgrade Completed
18	476+680	476+860	0.180	RHS	Subgrade Completed
19	477+180	478+000	0.820	RHS	Subgrade Completed
20	478+040	479+200	1.160	RHS	Subgrade Completed
21	481+300	481+570	0.270	RHS	Subgrade Completed
22	484+100	486+400	2.300	RHS	Subgrade Completed
23	487+190	487+920	0.730	RHS	Subgrade Completed
24	487+940	488+110	0.170	RHS	Subgrade Completed
Sub-Total			**18.650**		**Subgrade Completed**
1	490+560	490+800	0.240	RHS	Subgrade Partially Completed
2	476+400	476+530	0.130	RHS	Subgrade Partially Completed
3	455+400	455+430	0.030	LHS	Subgrade Partially Completed
Sub-Total			**0.400**		**Subgrade Partially Completed**
GSB Widening Portion					
1	453+800	455+140	1.340	LHS	GSB Completed
2	455+160	455+360	0.200	LHS	GSB Completed
3	455+370	455+430	0.060	LHS	GSB Completed
4	456+090	457+000	0.910	LHS	GSB Completed
5	459+570	460+450	0.880	LHS	GSB Completed
6	460+697	461+400	0.703	LHS	GSB Completed
7	464+300	466+070	1.770	LHS	GSB Completed
8	466+830	468+140	1.310	LHS	GSB Completed
9	468+190	468+550	0.360	LHS	GSB Completed
10	468+960	469+900	0.940	LHS	GSB Completed
11	473+650	473+800	0.150	LHS	GSB Completed
12	475+350	476+270	0.920	LHS	GSB Completed
13	476+300	476+400	0.100	LHS	GSB Completed
14	469+800	470+000	0.200	RHS	GSB Completed
15	470+870	471+460	0.590	RHS	GSB Completed
16	471+500	472+690	1.190	RHS	GSB Completed
17	474+050	474+260	0.210	RHS	GSB Completed
18	474+290	474+520	0.230	RHS	GSB Completed
19	476+680	476+860	0.180	RHS	GSB Completed
20	477+180	478+000	0.820	RHS	GSB Completed
21	478+040	479+200	1.160	RHS	GSB Completed
22	484+100	486+400	2.300	RHS	GSB Completed
23	487+200	487+920	0.720	RHS	GSB Completed
24	487+940	488+110	0.170	RHS	GSB Completed
Sub-Total			**17.413**		**GSB Completed**
WMM Widening Portion					
1	453+800	455+140	1.340	LHS	WMM Completed
2	455+160	455+360	0.200	LHS	WMM Completed
3	456+090	456+110	0.020	LHS	WMM Completed

4	464+400	466+070	1.670	LHS	WMM Completed
5	466+830	468+140	1.310	LHS	WMM Completed
6	468+960	469+300	0.340	LHS	WMM Completed
7	475+350	476+270	0.920	LHS	WMM Completed
8	469+800	470+000	0.200	RHS	WMM Completed
9	476+680	476+860	0.180	RHS	WMM Completed
10	477+180	478+000	0.820	RHS	WMM Completed
11	478+040	479+000	0.960	RHS	WMM Completed
12	484+100	486+400	2.300	RHS	WMM Completed
13	487+200	488+110	0.910	RHS	WMM Completed
Sub-Total			**11.170**		**WMM Completed**
1	455+370	455+430	0.060	LHS	WMM Partially Completed
2	456+110	457+000	0.890	LHS	WMM Partially Completed
3	459+570	460+450	0.880	LHS	WMM Partially Completed
4	460+697	461+400	0.703	LHS	WMM Partially Completed
5	464+300	464+400	0.100	LHS	WMM Partially Completed
6	468+190	468+550	0.360	LHS	WMM Partially Completed
7	469+300	469+700	0.400	LHS	WMM Partially Completed
8	473+650	473+800	0.150	LHS	WMM Partially Completed
9	476+300	476+400	0.100	LHS	WMM Partially Completed
10	471+120	471+460	0.340	RHS	WMM Partially Completed
11	471+500	472+690	1.190	RHS	WMM Partially Completed
12	474+050	474+260	0.210	RHS	WMM Partially Completed
13	474+290	474+700	0.410	RHS	WMM Partially Completed
14	479+000	479+200	0.200	RHS	WMM Partially Completed
Sub-Total			**5.993**		**WMM Partially Completed**
DBM Widening Portion					
1	464+445	466+035	1.590	LHS	DBM Completed
2	466+840	467+000	0.160	LHS	DBM Completed
3	467+100	467+485	0.385	LHS	DBM Completed
4	468+960	469+080	0.120	LHS	DBM Completed
5	485+730	486+400	0.670	RHS	DBM Completed
6	487+200	488+100	0.900	RHS	DBM Completed
Sub-Total			**3.825**		**DBM Completed**

Subgrade New 2-lane / Realignment Portion					
Sl. No.	**Chainage (Km)**		**Length (Km)**	**Side**	**Status**
	From	**To**			
1	461+410	461+500	0.090	LHS	Subgrade Completed
2	462+846	463+500	0.654	LHS	Subgrade Completed
3	471+100	471+350	0.250	LHS	Subgrade Completed
4	471+510	472+180	0.670	LHS	Subgrade Completed
5	472+260	472+720	0.460	LHS	Subgrade Completed
6	476+400	476+500	0.100	LHS	Subgrade Completed
7	477+540	477+770	0.230	LHS	Subgrade Completed

8	477+770	477+970	0.200	LHS	Subgrade Completed
9	478+040	479+210	1.170	LHS	Subgrade Completed
10	482+720	482+820	0.100	LHS	Subgrade Completed
11	483+100	488+200	5.100	LHS	Subgrade Completed
12	453+800	455+120	1.320	RHS	Subgrade Completed
13	455+190	455+365	0.175	RHS	Subgrade Completed
14	456+530	457+240	0.710	RHS	Subgrade Completed
15	458+490	458+800	0.310	RHS	Subgrade Completed
16	459+600	461+370	1.770	RHS	Subgrade Completed
17	461+600	461+770	0.170	RHS	Subgrade Completed
18	464+260	466+140	1.880	RHS	Subgrade Completed
19	466+800	468+148	1.348	RHS	Subgrade Completed
20	468+162	468+560	0.398	RHS	Subgrade Completed
21	468+920	469+000	0.080	RHS	Subgrade Completed
22	469+010	469+800	0.790	RHS	Subgrade Completed
23	475+400	475+600	0.200	RHS	Subgrade Completed
24	479+630	479+950	0.320	RHS	Subgrade Completed
25	483+200	484+100	0.900	RHS	Subgrade Completed
26	486+400	487+200	0.800	RHS	Subgrade Completed
Sub-Total			**20.195**		**Subgrade Completed**
1	455+375	455+430	0.055	RHS	Subgrade Partially Completed
2	457+680	457+950	0.270	LHS	Subgrade Partially Completed
3	477+000	477+540	0.540	LHS	Subgrade Partially Completed
4	479+210	479+300	0.090	LHS	Subgrade Partially Completed
5	490+480	490+800	0.320	LHS	Subgrade Partially Completed
6	456+100	456+530	0.430	RHS	Subgrade Partially Completed
7	457+240	457+340	0.100	RHS	Subgrade Partially Completed
8	457+680	457+950	0.270	RHS	Subgrade Partially Completed
9	476+288	476+400	0.112	RHS	Subgrade Partially Completed
10	459+560	459+600	0.040	RHS	Subgrade Partially Completed
Sub-Total			**2.227**		**Subgrade Partially Completed**
GSB New 2-lane / Realignment Portion					
1	461+410	461+500	0.090	LHS	GSB Completed
2	471+100	471+320	0.220	LHS	GSB Completed
3	471+540	472+180	0.640	LHS	GSB Completed
4	472+260	472+700	0.440	LHS	GSB Completed
5	476+400	476+500	0.100	LHS	GSB Completed
6	477+720	477+960	0.240	LHS	GSB Completed
7	478+040	479+210	1.170	LHS	GSB Completed
8	483+100	488+160	5.060	LHS	GSB Completed
9	453+800	455+120	1.320	RHS	GSB Completed
10	455+190	455+365	0.175	RHS	GSB Completed
11	455+375	455+400	0.025	RHS	GSB Completed
12	456+530	457+240	0.710	RHS	GSB Completed
13	458+490	458+770	0.280	RHS	GSB Completed

14	459+600	461+370	1.770	RHS	GSB Completed
15	461+600	461+770	0.170	RHS	GSB Completed
16	464+300	466+140	1.840	RHS	GSB Completed
17	466+800	468+148	1.348	RHS	GSB Completed
18	468+162	468+550	0.388	RHS	GSB Completed
19	468+920	469+000	0.080	RHS	GSB Completed
20	469+010	469+800	0.790	RHS	GSB Completed
21	475+420	475+600	0.180	RHS	GSB Completed
22	479+840	479+940	0.100	RHS	GSB Completed
23	483+200	484+100	0.900	RHS	GSB Completed
24	486+400	487+200	0.800	RHS	GSB Completed
Sub-Total			**18.836**		**GSB Completed**
1	462+846	463+330	0.484	LHS	GSB Partially Completed
2	463+385	463+470	0.085	LHS	GSB Partially Completed
3	477+540	477+720	0.180	LHS	GSB Partially Completed
Sub-Total			**0.749**		**GSB Partially Completed**
WMM New 2-lane / Realignment Portion					
1	471+100	471+320	0.220	LHS	WMM Completed
2	471+555	472+180	0.625	LHS	WMM Completed
3	472+260	472+700	0.440	LHS	WMM Completed
4	477+720	477+940	0.220	LHS	WMM Completed
5	478+060	479+200	1.140	LHS	WMM Completed
6	483+100	488+160	5.060	LHS	WMM Completed
7	453+800	455+120	1.320	RHS	WMM Completed
8	455+190	455+365	0.175	RHS	WMM Completed
9	456+530	457+220	0.690	RHS	WMM Completed
10	458+490	458+770	0.280	RHS	WMM Completed
11	459+600	461+370	1.770	RHS	WMM Completed
12	461+600	461+770	0.170	RHS	WMM Completed
13	464+300	466+110	1.810	RHS	WMM Completed
14	466+800	468+148	1.348	RHS	WMM Completed
15	468+162	468+550	0.388	RHS	WMM Completed
16	468+920	469+000	0.080	RHS	WMM Completed
17	469+010	469+800	0.790	RHS	WMM Completed
18	475+420	475+600	0.180	RHS	WMM Completed
19	483+200	484+100	0.900	RHS	WMM Completed
20	486+400	487+200	0.800	RHS	WMM Completed
Sub-Total			**18.406**		**WMM Completed**
1	461+410	461+500	0.090	LHS	WMM Partially Completed
2	462+870	463+300	0.430	LHS	WMM Partially Completed
3	463+385	463+470	0.085	LHS	WMM Partially Completed
4	476+400	476+500	0.100	LHS	WMM Partially Completed
5	455+375	455+400	0.025	RHS	WMM Partially Completed
6	479+840	479+940	0.100	RHS	WMM Partially Completed
Sub-Total			**0.830**		**WMM Partially Completed**

DBM New 2-lane / Realignment Portion					
1	471+120	471+320	0.200	LHS	DBM Completed
2	471+555	472+170	0.615	LHS	DBM Completed
3	472+300	472+625	0.325	LHS	DBM Completed
4	472+635	472+655	0.020	LHS	DBM Completed
5	477+770	477+930	0.160	LHS	DBM Completed
6	478+060	478+130	0.070	LHS	DBM Completed
7	478+250	478+705	0.455	LHS	DBM Completed
8	478+750	478+840	0.090	LHS	DBM Completed
9	478+860	479+050	0.190	LHS	DBM Completed
10	479+060	479+120	0.060	LHS	DBM Completed
11	483+140	483+240	0.100	LHS	DBM Completed
12	483+610	483+690	0.080	LHS	DBM Completed
13	483+740	483+830	0.090	LHS	DBM Completed
14	484+100	484+260	0.160	LHS	DBM Completed
15	484+600	484+840	0.240	LHS	DBM Completed
16	484+900	485+770	0.870	LHS	DBM Completed
17	485+780	486+440	0.660	LHS	DBM Completed
18	486+500	486+560	0.060	LHS	DBM Completed
19	486+800	487+000	0.200	LHS	DBM Completed
20	487+240	487+460	0.220	LHS	DBM Completed
21	487+470	487+560	0.090	LHS	DBM Completed
22	487+580	488+120	0.540	LHS	DBM Completed
23	453+840	454+425	0.585	RHS	DBM Completed
24	454+450	454+480	0.030	RHS	DBM Completed
25	454+495	455+040	0.545	RHS	DBM Completed
26	456+580	456+650	0.070	RHS	DBM Completed
27	456+690	456+750	0.060	RHS	DBM Completed
28	458+510	458+650	0.140	RHS	DBM Completed
29	459+640	460+240	0.600	RHS	DBM Completed
30	464+300	465+770	1.470	RHS	DBM Completed
31	465+790	466+070	0.280	RHS	DBM Completed
32	466+830	467+970	1.140	RHS	DBM Completed
33	468+090	468+240	0.150	RHS	DBM Completed
34	469+260	469+500	0.240	RHS	DBM Completed
35	475+465	475+590	0.125	RHS	DBM Completed
36	483+200	483+250	0.050	RHS	DBM Completed
37	483+370	483+530	0.160	RHS	DBM Completed
38	483+800	484+060	0.260	RHS	DBM Completed
39	486+490	486+750	0.260	RHS	DBM Completed
40	486+820	486+925	0.105	RHS	DBM Completed
41	487+150	487+200	0.050	RHS	DBM Completed
Sub-Total			**11.815**		**DBM Completed**

B. Service Road:

Sl. No.	Chainage (Km)		Length (Km)	Side
	From	To		
Subgrade Complete/Partially complete				
1	466+400	466+630	0.230	RHS
2	466+640	467+210	0.570	RHS
3	480+400	480+500	0.100	RHS
4	482+400	482+550	0.150	LHS
		Sub-Total	**1.050**	
GSB Complete/Partially complete				
1	466+400	466+630	0.230	RHS
2	466+640	467+210	0.570	RHS
3	480+400	480+500	0.100	RHS
		Sub-Total	**0.900**	
WMM Complete/Partially complete				
1	466+400	466+630	0.230	RHS
2	466+640	467+210	0.570	RHS
3	480+400	480+500	0.100	RHS
		Sub-Total	**0.900**	

4. Major Bridges

(a) The site includes the following existing Major Bridges yet to be taken up:

Sl. No.	Existing Chainage (km)	Type of Structures			No. of Spans with span length in m	Width (m)
		Foundation	Sub Structure	Super Structure		
1	458.200	Well	RCC Wall	RCC Box Girder	21.6+29.8+21.6=73 m	11.4
2	488.400	Well	RCC Wall	RCC Box Girder	33.5+38.55+33.5=105.6m	11.4

(b) New 2-lane Major Bridge Under Construction Stage (Partially complete):

Sl. No.	Design Chainage (km)	Type of Structure& Status			No. of Spans with span length in m	Width (m)
		Foundation	Sub structure	Super structure		
1	458+150	Pile & A1= Pile Cap Completed. P1= Pile Cap Completed. P2= Pile Cap Completed. A2= 12nos. Pile completed out of 12 nos.	RCC Wall & A1= Abutment Shaft completed. P1= Pier Cap Completed. P2= Pier Cap Completed. A2= Nil.	T Beam Girder & Nil.	21.6+29.8+21.6=73.0m	12.00

2	488+450	Well & A1= Pile Cap Completed. P1= Pile Cap Completed. P2= Pile Cap Completed. A2= Pile Cap Completed.	RCC Wall & A1= Abutment Shaft completed. P1= Pier shaft 1st lift completed. P2= Nil. A2= Nil.	T Beam Girder & Nil.	33.5+38.55+ 33.5=105.55 m	12.00

5. Road over-bridges (ROB)/ Road under-bridge(RUB)

The Site includes the following ROB (road over railway line)/RUB (road under railway line):

Sl. No.	Chainage (km)	Type of Structures		No. of Spans with span length (m)	Total Width (m)	ROB/RUB
		Foundation	Super Structure			
Nil						

6. Grade Separators

The Site includes the following grade separators.

Sl.No.	Chainage (km)	Type of Structures		No. of Spans with span length (m)	Total Width (m)
		Foundation	Super Structure		
Nil					

Grade Separator Under Construction Stage (Partially complete):

Sl. No.	Design Chainage (km)	Status		No. of Spans with span length (m)	Remarks
		Foundation	Super Structure		
1	488+740	A1= 8 nos. Pile Completed out of 8 nos. A2= 8 nos. Pile Completed out of 8 nos.	Nil.	1 x 30	

7. Minor bridges

The Site includes the following minor bridges in existing 2-lane:

Sl. No.	Existing Chainage (km)	Type of Structures			No. of Spans with span length in m	Width (m)	Status
		Foundation	Sub Structure	Super Structure			
1	455.150	Shallow	RCC Wall	Solid Slab	2 x 8 = 16 m	7.9	
2	455.370	Shallow	PCC Gravity Wall	Solid Slab	1 x 6.1 = 6.1 m	7.9	
3	457.375	Shallow	RCC Wall	Solid Slab	2 x 9.4 = 18.8 m	7.9	
4	459.190	Shallow	PCC Gravity Wall	Solid Slab	1 x 8.7 = 8.7 m	7.9	
5	468.175	Shallow	PCC Wall	Solid Slab	2 x 7.2 = 14.4 m	7.9	

6	471.495	Shallow	PCC Gravity Wall	Solid Slab	1 x 10.62 = 10.62 m	7.9	
7	474.270	Shallow	PCC Wall	Solid Slab	2 x 10 = 20 m	7.9	
8	476.260	Shallow	PCC Gravity Wall	Solid Slab	1 x 6.3 = 6.3 m	7.9	
9	478.000	Shallow	PCC Wall	Solid Slab	2 x 7.3 = 14.6 m	7.9	
10	480.320	Shallow	PCC Wall	Solid Slab	2 x 7.5 = 15 m	7.9	
11	481.150	Shallow	PCC Wall	Solid Slab	2 x 7.5 = 15 m	7.9	
12	482.850	Shallow	PCC Wall	Solid Slab	2 x 7.5 = 15 m	7.9	

Minor Bridge Work Under Construction Stage (Partially complete)

New Minor Bridge (Partially complete):

Sl. No.	Existing Chainage (km)	Type of Structures			No. of Spans with span length in m	Width (m)	Status
		Foundation	Sub Structure	Super Structure			
1	455.370	Shallow	PCC Gravity Wall	Solid Slab	1 x 6.1 = 6.1 m	7.9	New 2-lane bridge; Completed up to top Slab except protection work, Retaining wall etc for RHS
2	457.375	Shallow	RCC Wall	Solid Slab	2 x 9.4 = 18.8 m	7.9	New 4-lane bridge; partially completed upto Wall 1st lift (substructure) for LHS &upto PCC (foundation) completed for RHS
3	459.570	Shallow	PCC Gravity Wall	Solid Slab	1 x 8.7 = 8.7 m	7.9	New 2-lane bridge; Completed up to top Slab except protection work, Retaining wall etc for RHS
4	468.175	Shallow	PCC Wall	Solid Slab	2 x 7.2 = 14.4 m	7.9	New 2-lane bridge; Completed up to top Slab, Retaining wall incomplete and protection work balance for RHS
5	471.495	Shallow	PCC Gravity Wall	Solid Slab	1 x 10.62 = 10.62 m	7.9	New 2-lane bridge; Completed up to top Slab, Retaining wall incomplete and protection work balance for LHS
6	474.270	Shallow	PCC Wall	Solid Slab	2 x 10 = 20 m	7.9	New 2-lane bridge; Raft (foundation) incomplete for LHS
7	476.260	Shallow	PCC Gravity Wall	Solid Slab	1 x 6.3 = 6.3 m	7.9	New 2-lane bridge; Completedupto Slab except protection work for RHS

8	478.000	Shallow	PCC Wall	Solid Slab	2 x 7.3 = 14.6 m	7.9	New 2-lane bridge; Completed upto Slab except protection work for LHS
9	481.150	Shallow	PCC Wall	Solid Slab	2 x 7.5 = 15 m	7.9	New 4-lane bridge+New 2-lane bridge on service road on both side; Completed upto Slab (MCW) for RHS. Retaining wall completed for Jorhat end & Retaining wall completed upto 1st lift for Jhanji end except protection work.
10	482.850	Shallow	PCC Wall	Solid Slab	2 x 7.5 = 15 m	7.9	New 2-lane bridge on MCW+New 2-lane bridge on service road on both side; Completedupto Raft for RHS MCW & partially complete upto raft for RHS Service Road Portion.

Widening of Minor Bridge (Partially complete):

Sl. No.	Design Chainage (KM)	Type of Structure			Span Arrangement	Width (m)	Status
		Foundation	Sub Structure	Super Structure			
1	468+155	Open	PCC Wall	Solid Slab	2 x 7.20 m	7.90	Widened to the required overall Width (12m); Completed upto Slab for LHS except protection work, retaining wall etc.
2	476+280	Open	PCC Wall	Solid Slab	1 x 6.30 m	7.90	Widened to the required overall Width (12m); Completed upto Slab for LHS except protection work.
3	482+950	Open	PCC Wall	Solid Slab	2 x 7.50 m	7.90	Widened to the required overall Width (12m); Partially Completed upto Raft for LHS except protection work

8. Railway level crossings

The Site includes the following railway level crossings**:**

Sl. No.	Existing chainage (km)	Number of Tracks	Remarks
		Nil	

9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses.

Underpasses Work Under Construction Stage (Partially complete):

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Type of Structures	No. of Spans with span length (m)	Status
1	453+575	453+515	VUP	1 x 12	Structure Completed up to top Slab for LHS & Partially completed upto wall 2nd lift for RHS
2	459+200	459+150	VUP	1 x 12	Structure Completed up to top Slab for RHS
3	462+525	462+460	VUP	1 x 12	Structure Completed upto top Slab for LHS & Partially completed upto wall 2nd lift for RHS
4	473+180	473+180	VUP	1 x 12	Structure Completed uptotop Slab for RHS
5	464+050	464+000	PUP	1 x 7	Structure Completed upto Slab for RHS
6	466+800	466+400	PUP	1 x 7	Structure Completed upto Slab for RHS
7	475+000	475+000	PUP	1 x 7	Structure Completed upto Slab for RHS
8	480+515	480+550	PUP	1 x 7	Structure Completed upto Slab for LHS
9	482+303	482+420	PUP	1 x 7	Structure Completed upto Slab for LHS

RE Wall Details:

Sl. No.	Design Chainage (Km)	Type of Structures	Status	Remarks
1	455+768	VUP	4727.201 Sqm RE panel casted at site.	Presuming max 10% damage of the total casted RE panels, the same shall not be considered from the total panels casted.
2	473+180	VUP	5590.982 Sqm RE panel casted at site.	
3	464+000	PUP	3132.285 Sqm RE panel casted at site.	
4	466+400	PUP	3589.288 Sqm RE panel casted at site.	
5	475+000	PUP	3193.495 Sqm RE panel casted at site.	
6	480+550	PUP	2382.313 Sqm RE panel casted at site.	
7	482+420	PUP	2119.762 Sqm RE panel casted at site.	

10. Culverts

The Site includes the following culverts,

10.1 List of Pipe Culverts

Sr. No.	Existing Chainage	Design Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width in m
1	453+900	453+895	HP	1x 1m dia	13.0
2	454+100	454+096	HP	1x 1 m dia	13.2

Sr. No.	Existing Chainage	Design Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width in m
3	454+856	454+856	HP	1x0.9m dia	13.4
4	455+043	455+039	HP	1x0.9m dia	13.5
5	455+757	455+756	HP	1x0.9m dia	13.4
6	455+788	455+786	HP	1x1.2m dia	13.2
7	456+133	456+133	HP	1x1.2m dia	13.2
8	456+496	456+496	HP	1x0.9m dia	13.1
9	456+809	456+809	HP	1x 1m dia	13.0
10	456+841	456+841	HP	1x 1m dia	12.9
11	457+260	457+254	HP	1x 1m dia	13.0
12	458+735	458+700	HP	1x 1m dia	13.1
13	459+190	459+147	HP	1x 1m dia	13.2
14	459+260	459+217	HP	1x 1m dia	13.1
15	459+768	459+725	HP	1x 1m dia	13.2
16	460+007	459+956	HP	1x 1m dia	13.0
17	460+157	460+107	HP	1x 1m dia	13.2
18	460+327	460+277	HP	1x 1m dia	13.2
19	460+455	460+405	HP	1x 1m dia	13.1
20	460+596	460+546	HP	1x 1m dia	13.2
21	460+718	460+667	HP	1x 1m dia	13.1
22	460+887	460+836	HP	1x 1m dia	13.0
23	461+305	461+251	HP	1x 1m dia	12.9
24	461+577	461+525	HP	1x 1m dia	12.9
25	461+811	461+757	HP	1x 1m dia	12.9
26	461+926	461+872	HP	1x 1m dia	12.8
27	462+090	462+032	HP	1x 1m dia	12.9
28	462+285	462+228	HP	1x 1m dia	12.7
29	462+610	462+550	HP	1x 1m dia	12.9
30	476+515	476+530	HP	2x1.2m dia	16.5
31	477+175	477+193	HP	2x1.2m dia	16.5
32	477+276	477+295	HP	2x1.2m dia	17.4
33	477+543	477+563	HP	2x1.2m dia	17.6
34	478+562	478+590	HP	2x1.2m dia	15.2
35	479+110	479+136	HP	2x1.2m dia	15.3

Pipe Culvert Work Under Construction Stage (partially complete)

Sr. No.	Existing Chainage	Design Chainage	Site Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width in m	Status
1	454+100	454+096	454+098	HP	1x 1 m dia	13.2	Completed in R/S except Protection work
2	454+856	454+856	454+857	HP	1x 0.9m dia	13.4	Completed in R/S except Protection work
3	455+043	455+039	455+042	HP	1x 0.9m dia	13.5	Completed in R/S except Protection work
4	455+757	455+756	455+756	HP	1x0.9m dia	13.4	Up to Pipe laying & Cradle Concrete Completed in R/S except Head Wall & Protection Work

5	455+788	455+786	455+786	HP	1x1.2m dia	13.2	Up to Pipe laying & Cradle Concrete Completed in R/S except Head Wall & Protection Work
6	456+133	456+133	456+130	HP	1x 1.2m dia	13.2	Completed in R/S except Protection work
7	456+496	456+496	456+492	HP	1x 0.9m dia	13.1	Completed in R/S except Protection work
8	456+809	456+809	456+808	HP	1x 1m dia	13.0	Completed in R/S except Protection work
9	456+841	456+841	456+840	HP	1x 1m dia	12.9	Completed in R/S except Protection work
10	457+260	457+254	457+254	HP	1x 1m dia	13	Completed in R/S except Protection work
11	458+735	458+700	458+703	HP	1x 1m dia	13.1	Excavation work completed in R/S
12	459+190	459+147	459+150	HP	1x 1m dia	13.2	Completed in R/S except Protection work
13	459+260	459+217	459+185	HP	1x 1m dia	13.1	Up to Pipe laid & Cradle Concrete Completed in R/S except Head Wall & Protection Work
14	459+768	459+725	459+729	HP	1x 1m dia	13.2	Completed in R/S except Protection work
15	460+007	459+956	459+960	HP	1x 1m dia	13.0	Completed in R/S except Protection work
16	460+157	460+107	460+109	HP	1x 1m dia	13.2	Completed in R/S except Protection work
17	460+327	460+277	460+277	HP	1x 1m dia	13.2	Completed upto Head wall in R/S except Protection work
18	460+455	460+405	460+408	HP	1x 1m dia	13.1	Completed upto Head wall in R/S except Protection work
19	460+596	460+546	460+551	HP	1x 1m dia	13.2	Completed upto Head wall in R/S except Protection work
20	460+718	460+667	460+669	HP	1x 1m dia	13.1	Completed in R/S except Protection work
21	460+887	460+836	460+839	HP	1x 1m dia	13.0	Completed in R/S except Protection work
22	461+305	461+251	461+251	HP	1x 1m dia	12.9	Completed in R/S except Protection work
23	461+577	461+525	461+526	HP	1x 1m dia	12.9	Completed upto Pipe laid &craddle concrete in R/S except Head wall & Protection work
24	461+811	461+757	461+761	HP	1x 1m dia	12.9	Completed upto Head wall in R/S except Protection work
25	461+926	461+872	461+873	HP	1x 1m dia	12.8	Completed up to Head Wall Ist Lift in R/S except protection work.
26	462+090	462+032	462+031	HP	1x 1m dia	12.9	Completed upto Head Wall B/S except protection work.
27	462+610	462+550	462+553	HP	1x 1m dia	12.9	Completed upto Head Wall L/S except protection work.

28	476+515	476+530	476+537	HP	2x1.2m dia	16.5	Completed upto Head Wall B/S except protection work.
29	477+175	477+193	477+201	HP	2x1.2m dia	16.5	Completed upto Pipe laid &craddle concrete in L/S except Head wall & Protection work Completed upto Head Wall R/S except protection work.
30	477+543	477+563	477+570	HP	2x1.2m dia	17.6	Completed upto Head Wall B/S except protection work.
31	478+562	478+590	478+596	HP	2x1.2m dia	15.2	Completed upto Head Wall B/S except protection work.
32	479+110	479+136	479+145	HP	2x1.2m dia	15.3	Completed upto Head Wall B/S except protection work.

10.2 List of Slab/Box/Arch Culverts

Sr. No.	Existing Chainage	Design Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width in m
1	453+171	453+171	Slab	1x1.9x1.6	11.0
2	463+597	463+536	Slab	1x1.5x2.0	11.0
3	464+649	464+586	Slab	1x1x1.5	10.6
4	465+570	465+507	Box	1x1.5x1.5	10.9
5	465+965	465+902	Box	1x1.5x1.5	10.8
6	467+234	467+206	Box	1x1.5x1.5	11.0
7	469+018	469+002	Box	1x1.5x1.5	10.6
8	469+684	469+667	Slab	1x3.0x1.5	10.3
9	470+472	470+460	Box	1x1.2x1.2	11.0
10	470+827	470+815	Slab	1x3.0x2	11.4
11	471+116	471+100	Box	1x1.5x1.5	11.2
12	472+351	472+351	Slab	1x6.0x3.0	10.3
13	472+953	472+953	Box	1x1.5x1.5	10.7
14	473+543	473+543	Box	1x1.5x1.5	10.3
15	473+934	473+943	Box	1x3.0x5.0	11.2
16	474+604	474+614	Slab	1x3.0x2.5	11.0
17	475+328	475+338	Slab	1x3.0x4.0	10.6
18	476+900	476+916	Slab	1x3.0x2.5	10.5
19	478+953	478+980	Slab	1x3.0x3.0	11.7
20	480+701	480+732	Box	1x1.5x1.0	11.5
21	481+693	481+821	Box	1x1.5x2.0	11.5
22	483+775	483+866	Box	1x3.0x2.0	13.1
23	484+856	484+931	Slab	1x0.9x3.0	12.1
24	485+571	485+646	Slab	1x6.0x4.0	19.0
25	487+871	487+920	Box	1x1.5x1.5	11.6

Box and Slab Culvert Work Under Construction Stage (Partially Complete)

Sr. No.	Existing Chainage	Design Chainage	Site Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width in m	Present Status
1	453+171	453+171	453+169	Slab	1x1.9x1.6	11.0	Completed upto Parapet wall in B/S except Protection work
2	463+597	463+536	463+543	Slab	1x1.5x2.0	11.0	Completed upto Slab in B/S except Parapet wall & Protection work
3	464+649	464+586	464+586	Slab	1x1.0x1.5	10.6	Completed upto Slab in R/S except Parapet wall & Protection work
4	465+570	465+507	465+514	Box	1x1.5x1.5	10.9	Completed upto Slab in R/S except Parapet wall & Protection work
5	465+965	465+902	465+908	Box	1x1.5x1.5	10.8	Completed upto Slab in R/S. Parapet wall &Retaining completed in Jhanji end except protection work.
6	467+234	467+206	467+212	Box	1x1.5x1.5	11.0	Completed upto Slab in B/S except Parapet wall & Protection work
7	469+018	469+002	469+009	Box	1x1.5x1.5	10.6	Completed upto Slab, Parapet wall & Retaining wall in R/S except Protection work
8	469+684	469+667	469+665	Slab	1x3.0x1.5	10.3	Completed upto Slab in R/S except Parapet wall & Protection work
9	470+472	470+460	470+467	Box	1x1.2x1.2	11.0	Completed upto Slab in B/S except Parapet wall, Return wall & Protection work
10	470+827	470+815	470+822	Slab	1x3.0x2	11.4	Completed upto Slab, Parapet wall in R/S except Retaining wall, Protection work
11	471+116	471+100	471+108	Box	1x1.5x1.5	11.2	Completed upto Slab in B/S except Protection work
12	472+351	472+351	472+358	Slab	1x6.0x3.0	10.3	Completed upto Slab, Parapet wall & Retaining wall in R/S except Protection work
13	472+953	472+953	472+959	Box	1x1.5x1.5	10.7	Completed upto Slab in R/S except Retaining wall, Parapet wall, Return wall & Protection work
14	473+543	473+543	473+553	Box	1x1.5x1.5	10.3	Completed upto Slab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
15	473+934	473+934	473+951	Box	1x3.0x5.0	11.2	Completed upto Slab in B/S except Protection work

16	475+328	475+338	475+347	Slab	1x3.0x4.0	10.6	Completed upto Slab in B/S except Protection work
17	476+900	476+916	476+924	Slab	1x3.0x2.5	10.5	Completed upto Slab & Parapet wall in B/S except Protection work
18	478+953	478+980	478+987	Slab	1x3.0x3.0	11.7	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
19	480+701	480+732	480+731	Box	1x1.5x1.0	11.5	Completed upto Slab in R/S except Parapet wall, Return wall & Protection work
20	481+693	481+821	481+829	Box	1x1.5x2.0	11.5	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
21	483+775	483+866	483+879	Box	1x3.0x2.0	13.1	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
22	484+856	484+931	484+940	Slab	1x0.9x3.0	12.1	Completed upto Slab & Parapet wall in B/S except Protection work
23	485+571	485+646	485+656	Slab	1x6.0x4.0	19	Completed upto Slab, Parapet wall & Return wall in L/S except Protection work Completed upto Slab, Parapet wall wallin R/S except Protection work
24	487+871	487+920	487+935	Box	1x1.5x1.5	11.6	Completed upto Slab, Parapet wall & Return wall in L/S except Protection work Completed upto Slab in R/S except Protection work

11. Bus Bays

The details of existing bus bays on the site are as follows:-

Sl. No.	Chainage (km)	Left Hand Side	Right hand side
Nil			

12. Truck Lay byes

The details of truck lay byes are as follows:

Sl. No.	Chainage (km)	Left Hand Side	Right hand side
Nil			

13. Road side drains

The details of road side drains completed/partially completed and to be completed up to final stage:

Drain Status RHS					
Sl.No.	**Chainage**		**Length (Km)**	**Present Status**	**Remarks**
	From	**To**			
1	453+220	453+280	0.060	Wall Completed	
2	453+288	453+306	0.018	Wall Completed	
3	453+309	453+359	0.050	Wall Completed	
4	453+380	453+397	0.017	Wall Completed	
5	453+409	453+416	0.007	Slab Completed	
6	453+416	453+424	0.008	Wall Completed	
7	453+434	453+441	0.007	Wall Completed	
8	453+580	453+608	0.028	Wall Completed	
9	453+615	453+660	0.045	Wall Completed	
10	453+740	453+825	0.085	Wall Completed	
11	453+825	453+855	0.030	Slab Completed	
12	459+021	459+140	0.119	Wall Completed	
13	462+450	462+480	0.030	Wall Completed	
14	462+485	462+522	0.037	Wall Completed	
15	462+536	462+566	0.030	Wall Completed	
16	462+586	462+615	0.029	Wall Completed	
17	462+665	462+670	0.005	Wall Completed	
18	462+670	462+675	0.005	Slab Completed	
19	462+675	462+695	0.020	Wall Completed	
20	462+695	462+700	0.005	Slab Completed	
21	462+700	462+720	0.020	Wall Completed	
22	462+725	462+740	0.015	Wall Completed	
23	462+755	462+791	0.036	Slab Completed	
24	462+810	462+813	0.003	Wall Completed	
25	462+813	462+818	0.005	Slab Completed	
26	462+970	462+991	0.021	Slab Completed	
27	462+991	462+993	0.002	Wall Completed	
28	462+998	463+053	0.055	Slab Completed	
29	463+078	463+091	0.013	Slab Completed	
30	463+098	463+145	0.047	Slab Completed	
31	463+157	463+180	0.023	Slab Completed	
32	463+180	463+182	0.002	Wall Completed	
33	463+182	463+190	0.008	Raft Completed	

34	463+205	463+207	0.002	Wall Completed	
35	470+040	470+293	0.253	Slab Completed	
36	470+300	470+352	0.052	Slab Completed	
37	470+359	470+410	0.051	Slab Completed	
38	470+420	470+458	0.038	Slab Completed	
39	470+575	470+590	0.015	Slab Completed	
40	472+700	472+720	0.020	Wall Completed	
41	472+720	472+744	0.024	Slab Completed	
42	472+753	472+800	0.047	Wall Completed	
43	472+818	472+830	0.012	Raft Completed	
44	472+840	472+860	0.020	Slab Completed	
45	472+870	472+938	0.068	Slab Completed	
46	472+944	472+949	0.005	Slab Completed	
47	472+976	473+090	0.114	Slab Completed	
48	473+105	473+133	0.028	Wall Completed	
49	473+140	473+185	0.045	Wall Completed	
50	473+192	473+220	0.028	Wall Completed	
51	473+220	473+342	0.122	Slab Completed	
52	473+342	473+380	0.038	Wall Completed	
53	473+380	473+410	0.030	Slab Completed	
54	473+496	473+518	0.022	Wall Completed	
55	474+735	474+750	0.015	Wall Completed	
56	474+765	474+880	0.115	Wall Completed	
57	474+880	474+900	0.020	Slab Completed	
58	475+255	475+325	0.070	Wall Completed	
59	480+020	480+040	0.020	Wall Completed	
60	480+040	480+095	0.055	Slab Completed	
61	480+100	480+110	0.010	Slab Completed	
62	480+110	480+126	0.016	Wall Completed	
63	480+126	480+132	0.006	Slab Completed	
64	480+233	480+238	0.005	Wall Completed	
65	480+450	480+670	0.220	Slab Completed	The partially constructed RCC Drain from Ch.480+450 to 481+200 RHS is not in suitable condition and hence needs to be reconstructed as per the site requirement.
66	480+670	480+860	0.190	Wall Completed	
67	480+860	480+880	0.020	Slab Completed	
68	480+880	480+885	0.005	Wall Completed	
69	480+885	481+040	0.155	Slab Completed	
70	481+075	481+100	0.025	Slab Completed	

71	481+100	481+180	0.080	Wall Completed	
72	481+400	481+500	0.100	Wall Completed	
73	481+500	481+750	0.250	Slab Completed	
74	481+805	481+825	0.020	Wall Completed	
75	481+860	481+932	0.072	Wall Completed	
76	481+932	481+940	0.008	Slab Completed	
77	481+940	481+950	0.010	Wall Completed	
78	481+950	482+420	0.470	Slab Completed	
79	482+510	482+520	0.010	Wall Completed	
80	482+520	482+876	0.356	Slab Completed	
81	482+876	482+880	0.004	Wall Completed	
82	483+060	483+155	0.095	Slab Completed	
83	483+155	483+156	0.001	Wall Completed	

Drain Status LHS

Sl.No.	Chainage		Length (Km)	Present Status	Remarks
	From	To			
1	453+200	453+230	0.030	Wall Completed	
2	453+240	453+300	0.060	Wall Completed	
3	453+310	453+355	0.045	Wall Completed	
4	453+540	453+660	0.120	Wall Completed	
5	453+720	453+820	0.100	Wall Completed	
6	453+820	453+830	0.010	Slab Completed	
7	453+840	453+850	0.010	Slab Completed	
8	453+870	453+900	0.030	Slab Completed	
9	462+450	462+540	0.090	Wall Completed	
10	462+680	462+730	0.050	Wall Completed	
11	462+735	462+745	0.010	Wall Completed	
12	462+770	462+790	0.020	Slab Completed	
13	462+860	462+935	0.075	Slab Completed	
14	462+935	462+950	0.015	Wall Completed	
15	462+950	463+010	0.060	Slab Completed	
16	463+010	463+015	0.005	Wall Completed	
17	463+030	463+330	0.300	Slab Completed	
18	463+345	463+355	0.010	Wall Completed	
19	463+370	463+630	0.260	Slab Completed	
20	463+640	463+665	0.025	Slab Completed	
21	463+670	463+710	0.040	Slab Completed	
22	463+710	463+745	0.035	Wall Completed	
23	463+780	463+870	0.090	Wall Completed	
24	463+880	463+895	0.015	Wall Completed	

25	463+905	463+920	0.015	Wall Completed	
26	463+925	463+960	0.035	Wall Completed	
27	463+965	463+990	0.025	Wall Completed	
28	464+004	464+080	0.076	Wall Completed	
29	464+085	464+205	0.120	Wall Completed	
30	464+215	464+225	0.010	Wall Completed	
31	466+170	466+190	0.020	Raft Completed	
32	466+480	466+488	0.008	Wall Completed	
33	466+488	466+493	0.005	Raft Completed	
34	466+510	466+540	0.030	Slab Completed	
35	466+550	466+560	0.010	Slab Completed	
36	466+575	466+585	0.010	Slab Completed	
37	466+595	466+605	0.010	Slab Completed	
38	466+605	466+610	0.005	Wall Completed	
39	466+610	466+620	0.010	Slab Completed	
40	466+620	466+628	0.008	Wall Completed	
41	466+628	466+670	0.042	Slab Completed	
42	466+670	466+680	0.010	Slab Completed	
43	466+700	466+705	0.005	Wall Completed	
44	466+705	466+820	0.115	Slab Completed	
45	466+830	466+835	0.005	Wall Completed	
46	466+835	466+842	0.007	Slab Completed	
47	466+850	466+970	0.120	Slab Completed	
48	466+980	467+040	0.060	Slab Completed	
49	470+000	470+010	0.010	Wall Completed	
50	470+010	470+285	0.275	Slab Completed	
51	470+302	470+340	0.038	Slab Completed	
52	470+355	470+372	0.017	Slab Completed	
53	470+380	470+430	0.050	Slab Completed	
54	470+435	470+447	0.012	Slab Completed	
55	470+520	470+545	0.025	Slab Completed	
56	470+550	470+585	0.035	Slab Completed	
57	470+590	470+630	0.040	Slab Completed	
58	470+650	470+695	0.045	Slab Completed	
59	472+710	472+735	0.025	PCC Completed	
60	472+780	472+837	0.057	Wall Completed	
61	472+837	472+849	0.012	Slab Completed	
62	472+849	472+906	0.057	Wall Completed	
63	472+906	472+926	0.020	Slab Completed	
64	472+995	473+023	0.028	Wall Completed	
65	473+040	473+081	0.041	Wall Completed	
66	473+094	473+135	0.041	Wall Completed	

67	473+140	473+165	0.025	Raft Completed	
68	473+177	473+201	0.024	Wall Completed	
69	473+201	473+241	0.040	Slab Completed	
70	473+241	473+253	0.012	Wall Completed	
71	473+275	473+292	0.017	Slab Completed	
72	473+292	473+305	0.013	Wall Completed	
73	473+325	473+390	0.065	Wall Completed	
74	474+770	474+925	0.155	Wall Completed	
75	474+950	475+140	0.190	Wall Completed	
76	480+400	480+408	0.008	Wall Completed	
77	480+408	480+490	0.082	Slab Completed	The partially constructed RCC Drain from Ch.480+450 to 481+200 LHS is not in suitable condition and hence needs to be reconstructed as per the site requirement.
78	480+510	480+680	0.170	Slab Completed	
79	480+680	480+685	0.005	Wall Completed	
80	480+745	480+770	0.025	Slab Completed	
81	480+785	480+825	0.040	Slab Completed	
82	480+825	480+845	0.020	Wall Completed	
83	480+845	480+930	0.085	Slab Completed	
84	480+950	481+035	0.085	Slab Completed	
85	481+050	481+080	0.030	Slab Completed	
86	481+080	481+098	0.018	Wall Completed	
87	481+098	481+110	0.012	PCC Completed	
88	481+375	481+382	0.007	Slab Completed	
89	481+382	481+490	0.108	Wall Completed	
90	481+520	481+780	0.260	Wall Completed	
91	481+810	482+015	0.205	Wall Completed	
92	482+015	482+220	0.205	Slab Completed	
93	482+220	482+225	0.005	Wall Completed	
94	482+225	482+315	0.090	Slab Completed	
95	482+315	482+318	0.003	Raft Completed	
96	482+365	482+705	0.340	Slab Completed	
97	482+725	482+910	0.185	Slab Completed	
98	483+110	483+120	0.010	Slab Completed	
99	483+120	483+140	0.020	Wall Completed	

14. Major junctions

The details of major junctions are as follows: -

Sl. No	Existing Chainage	Design Chainage	Category of Road	Type of Junction	Remarks
1	457+200	457+250	-	4-legged	BaligaonCharali
2	461+600	461+500	-	4-legged	Nimatighat
3	479+950	479+950	ODR	3-legged	Baloma Junction
4	486+700	486+800	Village Road	4-legged (Shrugged)	Hanschara Village

15. Minor Junctions

The details of minor junctions are noted below: -

Sl. No	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
1	455+772	Both Side	4.00	4.00
2	456+067	Right		7.00
3	458+200	Both Side	4.00	4.00
4	459+000	Left	3.50	
5	459+160	Both Side	3.50	3.50
6	460+000	Right		3.50
7	460+600	Left	3.50	
8	460+610	Right		3.50
9	460+810	Left	4.00	
10	464+000	Left	3.50	
11	465+300	Right		3.50
12	466+610	Right		3.50
13	466+876	Right		3.50
14	468+270	Left	3.50	
15	468+800	Left	3.50	
16	470+000	Right		3.50
17	471+636	Right		3.50
18	472+210	Left	3.50	
19	472+720	Both side	3.50	3.50
20	473+520	Left	4.00	
21	474+920	Left	4.00	
22	477+800	Left	4.50	
23	480+700	Left	5.00	
24	481+020	Left	4.50	
25	481+500	Left	4.00	
26	484+580	Right		3.50
27	489+920	Right		3.50

16. Bypasses

The details of bypasses are as follows :-

Sl. No	Name of Bypass (town)	Chainage (km) from…. to	Length in Km	Carriageway	
				Width (m)	Type
Nil					

17. Other Structures

Nil

Annex-II
(Schedule-A)
Dates for Providing Right of Way

The dates on which the Authority shall provide Right to Way to the Contractor on different stretches of the Site are stated below.

Sl. No	From km to km	Length (In km)	Width (m)	Date of providing ROW
1	2	3	4	5

	Full Right of Way (full width) a) Full stretch	Km 453.000 to km 490.800 of NH-37	37.8	60m/ 120 m at Toll Plaza	On Appointed date

Annex-III
(Schedule-A)
Alignment Plans

The existing alignment of the Project Highway shall be modified in the following sections as per the alignment plan indicated below:

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level as indicated in the alignment plan shall be considered as minimum FRL and in any case, the finished road level of the project highway should not beless than those indicated in the

alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based onsite/design requirement.

Annex-IV
(Schedule-A)
Environment Clearances

The following environment clearance have been obtained: N/A

The following environment clearance are awaited: Nil

(Schedule-B)

(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C. The alignment plan of the Project Highway is specified in Annexure-III of Schedule A. The proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be treated as an approximate assessment. Contractor shall design the alignment plans and profiles of the Project Highway based on site / design requirement mentioned in Schedule-D with approval from Authority's Engineer within the available Right of Way.

2 Rehabilitation and augmentation

Rehabilitation and augmentation shall include Four- laning and strengthening of the Project Highway as described in Annex-1 of this Schedule-B and in Schedule-C.

3 Specification and Standards

The Project Highway shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

Annex-I

(Schedule-B)

Description of Four Laning and strengthening

1. Widening of the Existing Highway

1.1 The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex III of Schedule-A. Notwithstanding anything to the contrary contained in this Agreement or IRC:SP:84-2019, the proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be treated as an approximate assessment. Contractor shall design the alignment plan and profile of the Project Highway based on site / design requirement mentioned in Schedule-D with approval from Authority's Engineer within

the available Right of Way. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for plain terrain to the extent land is available. The same shall not constitute a change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provision of Article 13.

1.2 Width of carriageway

1.2.1 The paved carriageway shall be 17.5 (seventeen point five) metre wide excluding the median as per IRC: SP: 84-2019.

1.2.2 Provided that in following Built-up/urban stretches, the service road shall be provided with the main carriageway as per IRC: SP: 84-2019.

Sl. No	Name of Township	Existing Chainage (km)		Design Chainage (km)	
		From	To	From	To
1	Jorhat, BahatiaGaon	453+140	454+078	453+140	454+080
2	Shantipur	458+950	459+350	458+985	459+385
3	Lurkihat	462+197	464+363	462+140	464+300
4	Cheniamguri	466+230	467+349	466+200	467+320
5	Latugarh, DhekiaKhoa	470+013	471+213	470+000	471+200
6	Dihapool	472+700	474+140	472+700	474+150
7	Kakajan, KamarKhatoal	474+490	475+340	474+500	475+350
8	Teok, Midhaghat	479+932	483+000	479+950	483+100
9	Jhanji	488+527	489+000	488+575	489+050

1.2.2 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.1 above.

1.2.3 Design Chainage corresponding to Existing Chainage

Kilometre stones are present in entire length of the project highway. It is called the “Existing Chainage”. During topography survey with Total Station, observations are made to these Km stones and after finalization of alignment by improving the existing geometry the chainage has been referred to “Design Chainage”. The relationship between the “Existing Chainage” and the “Design Chainage” as per field surveys of the location of existing Km stones using the total station for the “Project Highway” is given blew.

Existing Chainage (Km)	Design Chainage (Km)	Name of Place
453+000	453+000	Jorhat
454+000	454+004	Jorhat
455+000	455+002	
456+000	455+998	
457+000	456+995	
458+000	457+200 to 458+100 (Realignment)	Lurukihat
459+000	458+957	Hatigarh
460+000	459+949	Chenijan

461+000	460+946	
462+000	461+400 to 462+300 (Realignment)	
463+000	462+940	
464+000	463+937	
465+000	464+938	
466+000	465+971	
467+000	466+970	
468+000	467+980	
469+000	468+984	Lattugarh
470+000	469+988	Lattugarh
471+000	470+986	Mellin/Sipaikula
472+000	472+000	Kakajan
473+000	473+003	
474+000	474+010	
475+000	475+010	
476+000	476+016	Badolipukdi
477+000	477+019	
478+000	478+026	Mudoijan
479+000	479+027	Teok
480+000	480+035	
481+000	481+130	
482+000	482+117	
483+000	482+800 to 484+100 (Realignment)	Jogduar
484+000		Kalaipani
485+000	485+074	
486+000	486+071	
487+000	486+500 to 487+200 (Realignment)	
488+000		Jhanji
489+000	488+700 to 489+700 (Realignment)	
490+000	489+971	
491+000	490+751	
491+050	490+800	

2. Geometric Design and General Features

2.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual IRC SP 84-2019.

2.2 Design Speed

The design speed shall be as per clause 2.2 of IRC: SP: 84-2019.

2.3 Improvement of the existing Road Geometrics

In the following sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and proper road signs and safety measures shall be provided.

Design Chainage in km		Length in m	Type of Deficiency	Remarks
From	To			
453+000	453+140	140	Merging Stretch	
457+200	458+000	800	Curve Improvement	
461+400	462+140	740	Curve Improvement	
462+140	462+250	110	VUP at km 462+460	
479+200	479+600	400	Curve Improvement	
483+100	484+100	1000	Geometry Improvement	
486+400	487+200	800	Curve Improvement	
489+050	489+700	650	Built-up area	Jhanji

2.4 Right of Way

Details of the Right of Way are given in Annex-II of Schedule-A

2.5 Type of Shoulders

(a) In built-up sections, footpaths/fully paved shoulders shall be provided in the following stretches:

Sl. No.	Stretch (from km to km)	Fully paved shoulders/footpath	Reference to cross section
As per TCS approved by Engineer in conformity with the Manual			

(b) In open country, Paved Shoulders of 1.50 m width and Earthen Shoulders for a width of 2.00 m will be provided.

(c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.10, 5.11 and 5.12 of the manual.

2.6 Lateral and Vertical Clearances at Underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/ crash barriers shall be as per the paragraph 2.11 of the Manual.

2.6.2 Lateral clearance:- The width/size of the opening at the underpasses shall be as follows:-

Sl. No.	Existing Chainage	Design Chainage	Span (No. x length x ht.) in m	Minimum Length of RE wall(m)	Remarks
1	488.680	488.740	1x30	800	2-lane Flyover
2	453+575	453+515	1x12	500	VUP
3	455+770	455+770	1x12	500	VUP
4	459+200	459+150	1x12	500	VUP

5	462+525	462+460	1x12	500	VUP
6	470+490	470+475	1x12	500	VUP
7	473+180	473+180	1x12	500	VUP
8	464+050	464+000	1x7	344	PUP
9	466+800	466+400	1x7	344	PUP
10	475+000	475+000	1x7	344	PUP
11	480+515	480+550	1x7	344	PUP
12	482+303	482+420	1x7	344	PUP

Note: RE wall length includes wall in front of abutments.

2.7 Lateral and vertical clearance at overpasses

2.7.1 Lateral and vertical clearances at over passes shall be as per paragraph 2.12 of the Manual.
NIL

2.7.2 Lateral clearances: The size of the opening at the overpasses shall be as follows:

Sl. No.	Location (chainage) From km to km	Number and length of spans	Remarks
Nil			

2.8 Service roads/ Slip Road

Service roads shall be constructed at the locations and for the lengths indicated below:

Sl No.	Existing Chainage		Design Chainage		Length (m)	Width (m)	Side
	From	To	From	To			
1	453+140	454+078	453+140	454+080	940	7.0	LHS & RHS
2	458+950	459+350	458+985	459+385	400	7.0	LHS & RHS
3	462+197	464+363	462+140	464+300	2160	7.0	LHS & RHS
4	466+230	467+349	466+200	467+320	1120	7.0	LHS & RHS
5	470+013	471+213	470+000	471+200	1200	7.0	LHS & RHS
6	472+700	474+140	472+700	474+150	1450	7.0	LHS & RHS
7	474+490	475+340	474+500	475+350	850	7.0	LHS & RHS
8	479+932	483+000	479+950	483+100	3150	7.0	LHS & RHS
9	488+527	489+000	488+575	489+050	475	7.0	LHS & RHS

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.13 of the Manual. Proposed levels at structure locations as shown in plan and profile specified in Annexure-III of Schedule-A are only for guidance and any changes in levels shall not constitute any change of scope. The requisite particulars are given below:

Sl.No.	Location of Structure	Design Chainage	Length (m)	Number and length of spans	Approach gradient	Remarks
1	Jhanji	488.740	800	1x30	2.5%	New 2-lane

2.9.2 In the case of Grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follow:

Sl. No.	Location	Type of Structure Length(m)	Cross road at			Remarks
			Existing level	Raised Level	Lowered Level	
Nil						

2.10 Cattle and Pedestrian Underpass/Overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows:

Sl. No.	Existing Chainage	Design Chainage	Proposed span arrangement	width in m	Minimum length of RE wall
1	464+050	464+000	1x7.0x3.5	27.5	344
2	466+800	466+400	1x7.0x3.5	27.5	344
3	475+000	475+000	1x7.0x3.5	27.5	344
4	480+515	480+550	1x7.0x3.5	27.5	344
5	482+303	482+420	1x7.0x3.5	27.5	344

2.11 Typical cross-sections of the Project Highway

Different type of cross sections for different segments of Four lane stretch shall be developed as provided in' Manual of Specifications & Standard for Four Laning of Highways through Public Private Partnership' (IRC:SP:84-2019) referred in schedule-D

Sl.No.	Design Km		Length of4 Lane in(m)	Widening Side / Scheme (As per original)	Widening Side / Scheme (As per amendment)	Widen &Strengthenof existingroad lengthin 2 lane (in km)
	From	To				
1	453+000	453+140	140	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
2	453+140	453+200	60	Concentric widening with service road	New 4 lane	-
3	453+200	453+800	600	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
4	453+800	454+080	280	Right side widening with service road	Widening of existing road in left Side	0.280
5	454+080	455+430	1,350	Eccentric (RHS) widening	Widening of existing road in left Side	1.350
6	455+430	456+110	680	VUPs/PUPs Approaches with RE Wall	New 4 lane (Raised portion)	-
7	456+110	457+200	1,090	Eccentric (RHS) widening	Widening of existing road in left Side	1.090
8	457+200	458+000	800	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
9	458+000	458+400	400	Eccentric (LHS) widening	Widening of existing road in Right Side	0.400
10	458+400	458+985	585	Eccentric (RHS) widening	Widening of existing road in left Side	0.585
11	458+985	459+385	400	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
12	459+385	461+400	2,015	Eccentric (RHS) widening	Widening of existing road in left Side	2.015
13	461+400	462+140	740	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
14	462+140	462+250	110	Realignment with SR and covered drain	Realignment (New 4 Lane)	-
15	462+250	462+750	500	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
16	462+750	463+750	1,000	Left side widening with service road	Widening of existing road in Right Side	1.000
17	463+750	464+300	550	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
18	464+300	466+130	1,830	Eccentric (RHS) widening	Widening of existing road in left Side	1.830
19	466+130	466+670	540	VUPs/PUPs Approaches with RE wall	New 4 lane (Raised portion)	-

				and service road		
20	466+670	467+320	650	Right side widening with service road	Widening of existing road in left Side	0.650
21	467+320	469+800	2,480	Eccentric (RHS) widening	Widening of existing road in left Side	2.480
22	469+800	470+000	200	Eccentric (LHS) widening	Widening of existing road in Right Side	0.200
23	470+000	470+220	220	Left side widening with service road	Widening of existing road in Right Side	0.220
24	470+220	470+800	580	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
25	470+800	471+200	400	Left side widening with service road	Widening of existing road in Right Side	0.400
26	471+200	472+700	1,500	Eccentric (LHS) widening	Widening of existing road in Right Side	1.500
27	472+700	472+910	210	Right side widening with service road	Widening of existing road in left Side	0.210
28	472+910	473+450	540	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
29	473+450	473+900	450	Right side widening with service road	Widening of existing road in left Side	0.450
30	473+900	474+150	250	Left side widening with service road	Widening of existing road inRight Side	0.250
31	474+150	474+500	350	Eccentric (LHS) widening	Widening of existing road in Right Side	0.350
32	474+500	474+850	350	Left side widening with service road	Widening of existing road in Right Side	0.350
33	474+850	475+150	300	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
34	475+150	475+350	200	Right side widening with service road	Widening of existing road in left Side	0.200
35	475+350	476+400	1,050	Eccentric (RHS) widening	Widening of existing road in left Side	1.050
36	476+400	479+200	2,800	Eccentric (LHS) widening	Widening of existing road in Right Side	2.800
37	479+200	479+600	400	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
38	479+600	479+950	350	Eccentric (RHS) widening	Widening of existing road in left Side	0.350
39	479+950	480+400	450	Right side widening with service road	Widening of existing road in left Side	0.450
40	480+400	480+700	300	VUPs/PUPs Approaches with RE wall and s	New 4 lane (Raised portion)	-
41	480+700	480+800	100	Right side widening with service road	Widening of existing road in left Side	0.100
42	480+800	481+200	400	Concentric widening with service road	New 4 lane	-
43	481+200	482+270	1,070	Left side widening with service road	Widening of existing road in Right Side	1.070
44	482+270	482+570	300	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	-
45	482+570	482+700	130	Left side widening with service road	Widening of existing road in Right Side	0.130
46	482+700	483+100	400	Right side widening with service road	Widening of existing road in left Side	0.400
47	483+100	484+100	1,000	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
48	484+100	486+400	2,300	Eccentric (LHS) widening	Widening of existing road in Right Side	2.300
49	486+400	487+200	800	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	-
50	487+200	488+575	1,375	Eccentric (LHS) widening	Widening of existing road in Right Side	1.375
51	488+575	489+050	475	2-lane Flyover Approaches with RE wall and service road	New 4 lane (Raised portion)	-
52	489+050	489+700	650	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	
53	489+700	490+800	1,100	Eccentric (LHS) widening	Widening of existing road in Right Side	1.100
	Total Design Length		**37,800**			**26.935**

Sl.No.	Design Km		Length of 4 Lane in (m)	Widening Side / Scheme (As per original)	Widening Side / Scheme (As per amendment)	2 Lane realignment/ bypass (in Km)
	From	To				
1	453+000	453+140	140	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	0.280
2	453+140	453+200	60	Concentric widening with service road	New 4 lane	0.120
3	453+200	453+800	600	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.200
4	453+800	454+080	280	Right side widening with service road	New 2 lane in Right Side	0.280
5	454+080	455+430	1,350	Eccentric (RHS) widening	New 2 lane in Right Side	1.350
6	455+430	456+110	680	VUPs/PUPs Approaches with RE Wall	New 4 lane (Raised portion)	1.360
7	456+110	457+200	1,090	Eccentric (RHS) widening	New 2 lane in Right Side	1.090
8	457+200	458+000	800	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	1.600
9	458+000	458+400	400	Eccentric (LHS) widening	New 2 lane in Left Side	0.400
10	458+400	458+985	585	Eccentric (RHS) widening	New 2 lane in Right Side	0.585
11	458+985	459+385	400	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	0.800
12	459+385	461+400	2,015	Eccentric (RHS) widening	New 2 lane in Right Side	2.015
13	461+400	462+140	740	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	1.480
14	462+140	462+250	110	Realignment with SR and covered drain	Realignment (New 4 Lane)	0.220
15	462+250	462+750	500	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.000
16	462+750	463+750	1,000	Left side widening with service road	New 2 lane in Left Side	1.000
17	463+750	464+300	550	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.100
18	464+300	466+130	1,830	Eccentric (RHS) widening	New 2 lane in Right Side	1.830
19	466+130	466+670	540	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.080
20	466+670	467+320	650	Right side widening with service road	New 2 lane in Right Side	0.650
21	467+320	469+800	2,480	Eccentric (RHS) widening	New 2 lane in Right Side	2.480
22	469+800	470+000	200	Eccentric (LHS) widening	New 2 lane in Left Side	0.200
23	470+000	470+220	220	Left side widening with service road	New 2 lane in Left Side	0.220
24	470+220	470+800	580	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.160
25	470+800	471+200	400	Left side widening with service road	New 2 lane in Left Side	0.400
26	471+200	472+700	1,500	Eccentric (LHS) widening	New 2 lane in Left Side	1.500
27	472+700	472+910	210	Right side widening with service road	New 2 lane in Right Side	0.210
28	472+910	473+450	540	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	1.080
29	473+450	473+900	450	Right side widening with service road	New 2 lane in Right Side	0.450
30	473+900	474+150	250	Left side widening with service road	New 2 lane in Left Side	0.250
31	474+150	474+500	350	Eccentric (LHS) widening	New 2 lane in Left Side	0.350
32	474+500	474+850	350	Left side widening with service road	New 2 lane in Left Side	0.350
33	474+850	475+150	300	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	0.600
34	475+150	475+350	200	Right side widening with service road	New 2 lane in Right Side	0.200
35	475+350	476+400	1,050	Eccentric (RHS) widening	New 2 lane in Right Side	1.050
36	476+400	479+200	2,800	Eccentric (LHS) widening	New 2 lane in Left Side	2.800
37	479+200	479+600	400	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	0.800
38	479+600	479+950	350	Eccentric (RHS) widening	New 2 lane in Right Side	0.350
39	479+950	480+400	450	Right side widening with service road	New 2 lane in Right Side	0.450
40	480+400	480+700	300	VUPs/PUPs Approaches with RE wall and s	New 4 lane (Raised portion)	0.600
41	480+700	480+800	100	Right side widening with service road	New 2 lane in Right Side	0.100
42	480+800	481+200	400	Concentric widening with service road	New 4 lane	0.800
43	481+200	482+270	1,070	Left side widening with service road	New 2 lane in Left Side	1.070
44	482+270	482+570	300	VUPs/PUPs Approaches with RE wall and service road	New 4 lane (Raised portion)	0.600
45	482+570	482+700	130	Left side widening with service road	New 2 lane in Left Side	0.130
46	482+700	483+100	400	Right side widening with service road	New 2 lane in Right Side	0.400
47	483+100	484+100	1,000	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	2.000
48	484+100	486+400	2,300	Eccentric (LHS) widening	New 2 lane in Left Side	2.300
49	486+400	487+200	800	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	1.600
50	487+200	488+575	1,375	Eccentric (LHS) widening	New 2 lane in Left Side	1.375
51	488+575	489+050	475	2-lane Flyover Approaches with RE wall	New 4 lane (Raised portion)	0.950

				and service road		
52	489+050	489+700	650	Realignment/Reconstruction Concentric Widening	Realignment (New 4 Lane)	1.300
53	489+700	490+800	1,100	Eccentric (LHS) widening	New 2 lane in Left Side	1.100
	Total Design Length		**37,800**			**48.665**

Note:

TCS schedule as given above shall be treated as an approximate assessment. Actual length of the TCS schedule shall be prepared by the Contractor based on detailed investigation and site requirement. Any variation in length of respective TCS specified in Schedule-B shall not constitute change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provisions of Article 13.

2.12 Balance work construction (Highway):

2.12.1 Reconstruction/rectification of underlying layers/already executed work including shoulder, kerbs, median, side slope etc. complete in all respect to be carried out wherever required and the same shall not qualify for any Change of Scope. The details of activities completed/partially completed has been mentioned in Para 3 of Annex-I in Schedule-A.

2.12.2 The existing road works to be rectified/maintained during construction as per Technical Specification.

2.12.3 The balance works along with the partially completed and remaining incomplete activities are to be completed as per the specifications in line with the typical cross-section mentioned in para 2.11 of Annex-I in Sch-B in all respect inclusive of Shoulders as per Manual. The contractor should visit the site and take realistic assessment of the work and prepare the bid accordingly. For avoidance of any doubt, it is clarified that adequacy of left-over works and completion thereof shall be the responsibility of the Contractor and shall not cause any Change of Scope.

3.0 Intersections and grade separators

All intersections and grade separators shall be as per Section 3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

Properly designed intersections shall be provided at the locations and of types and features given in the tables below:

(a) At-grade intersections

i) Major Junction

Sl.no	Existing Chainage	Design Chainage	Category of Road	Type of Junction	Remarks
1	457+200	457+250	-	4-legged	BaligaonCharali
2	461+600	461+500	-	4-legged	Nimatighat
3	479+950	479+950	ODR	3-Legged	Baloma Junction
4	486+700	486+800	Village Road	4-legged (Shrugged)	Hanschara Village

ii) Minor Junctions

Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m

			Left	Right
1	455+772	Both side	4.00	4.00
2	456+067	Right	-	7.00
3	458+200	Both side	4.00	4.00
4	459+000	Left	3.50	-
5	459+160	Both side	3.50	3.50
6	460+000	Right	-	3.50
7	460+600	Left	3.50	-
8	460+610	Right	-	3.50
9	460+810	Left	4.00	-
10	464+000	Left	3.50	-
11	465+300	Right	-	3.50
12	466+610	Right		3.50
13	466+876	Right		3.50
14	468+270	Left	3.50	-
15	468+800	Left	3.50	-
16	470+000	Right	-	3.50
17	471+636	Right	-	3.50
18	472+210	Left	3.50	-
19	472+720	Both side	3.50	3.50
20	473+520	Left	4.00	-
21	474+920	Left	4.00	-
22	477+800	Left	4.50	-
23	480+700	Left	5.00	-
24	481+020	Left	4.50	-
25	481+500	Left	4.00	-
26	484+580	Right	-	3.50
27	489+920	Right	-	5.00

(b) Grade separated intersection without ramps

Sl. No.	Location	Salient features	Minimum length of viaduct to be provided	Road to carried over/under the structure
Nil				

Note:

1. *Type of junction to be improved as per IRC:SP:84-2019 and MOST type design for intersection on National Highways, 1992.*

2. *Any other junction not mentioned above but observed during construction of the Project Highway shall be improved as per IRC:SP:84-2019 requirements. The same shall not constitute a change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provisions of Article 13.*

3. *The Contractor shall take up 'Detailed Engineering Study' to ascertain further details of all intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in Section 3 of IRC:SP:84-2019. The same shall not constitute a change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provisions of Article 13.*

4. Road embankment and cut section

4.1 Widening and improvement of the existing road embankment/cuttings and constructions of new road embankment/cuttings shall conform to the specifications and standards given in Section 4 of the Manual and the specified cross sectional details. Notwithstanding anything to the contrary contained in this Agreement or IRC:SP:84-2019, the proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be deemed to be part of this Schedule-B and shall be treated as an approximate assessment. Based on site / design requirement specified in Schedule-D, the Contractor shall design alignment plan and profile of the Project Highway with approval from Authority's Engineer within the available Right of Way. Deficiencies in the plan and profile of the existing road shall be corrected.

4.2 Raising of existing road. The existing road shall be raised in the following section :

Design Chainage in Km		Length in m	Remarks
From	To		
453+200	453+800	600	VUP
455+430	456+110	680	VUP
458+985	459+385	400	VUP
462+250	462+750	500	VUP
463+750	464+300	550	PUP
466+130	466+670	540	PUP
470+220	470+800	580	VUP
472+910	473+450	540	VUP
474+850	475+150	300	PUP
480+400	480+700	300	PUP
482+270	482+570	300	PUP
488+575	489+050	475	Flyover

5.0 Pavement design

5.1 Pavement design shall be carried out in accordance with Section-5 of IRC:SP:84-2019, IRC:37-2018 and IRC:58-2015.

5.2 Type of pavement

The type of the pavement for the entire stretch shall be of flexible type, expect in following locations where it is Rigid type pavement.

Sl. No.	Design Chainage (km)		Length (m)	Location
	From	To		
1	468.625	469.025	400	Proposed Toll Plaza with taper approach

5.3 Design requirements

5.3.1 Design Period and Strategy

Flexible pavement for new pavement and for widening and strengthening of the existing pavement shall be designed for a minimum design period of 15 years. Stage constructions shall not be permitted.

Rigid pavement shall be constructed at proposed toll plaza location including taper portion on both sides. Pavement shall be designed for a minimum design period of 30 years.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement of the Manual, the contractor shall design the pavement for design traffic of not less than 46 million standard axles (msa) or as per the actual traffic whichever is higher from km 453.000 to km 491.050.

5.4 Reconstruction of stretches

The following stretches of the existing road shall be reconstructed. These shall be designed as new pavement.

Design Chainage in km		Length in m	Remarks
From	To		
453+200	453+800	600	VUP
455+430	456+110	680	VUP
458+985	459+385	400	VUP
462+250	462+750	500	VUP
463+750	464+300	550	PUP
466+130	466+670	540	PUP
470+220	470+800	580	VUP
472+910	473+450	540	VUP
474+850	475+150	300	PUP
480+400	480+700	300	PUP
482+270	482+570	300	PUP
488+575	489+050	475	Flyover

6. Roadside drainage

6.1. Drainage system including surface drains for the Project Highway shall be provided as per section 6 of the Manual. Covered RCC Drains shall be provided in the following stretches.

Design Chainage in km		Length in m	Side
From	To		
453+140	454+080	940	Both Side
455+430	456+110	680	Both Side
458+985	459+385	400	Both Side
462+250	464+300	2050	Both Side
466+130	467+320	1190	Both Side
470+000	471+200	1200	Both Side
472+700	474+150	1450	Both Side
474+500	475+350	850	Both Side
479+950	483+100	3150	Both Side
488+575	489+050	475	Both Side
	Total length	**12385**	

Status of RCC drain completed/Partially completed as per Schedule A

RCC drain (Covered) partially complete in the following stretches to be completed in all respect

Drain Status RHS					
Sl.No.	Chainage		Length (Km)	Present Status	Remarks
	From	To			
1	453+220	453+280	0.060	Wall Completed	
2	453+288	453+306	0.018	Wall Completed	
3	453+309	453+359	0.050	Wall Completed	
4	453+380	453+397	0.017	Wall Completed	
5	453+409	453+416	0.007	Slab Completed	
6	453+416	453+424	0.008	Wall Completed	
7	453+434	453+441	0.007	Wall Completed	
8	453+580	453+608	0.028	Wall Completed	
9	453+615	453+660	0.045	Wall Completed	
10	453+740	453+825	0.085	Wall Completed	
11	453+825	453+855	0.030	Slab Completed	
12	459+021	459+140	0.119	Wall Completed	
13	462+450	462+480	0.030	Wall Completed	
14	462+485	462+522	0.037	Wall Completed	
15	462+536	462+566	0.030	Wall Completed	
16	462+586	462+615	0.029	Wall Completed	
17	462+665	462+670	0.005	Wall Completed	
18	462+670	462+675	0.005	Slab Completed	
19	462+675	462+695	0.020	Wall Completed	
20	462+695	462+700	0.005	Slab Completed	
21	462+700	462+720	0.020	Wall Completed	
22	462+725	462+740	0.015	Wall Completed	
23	462+755	462+791	0.036	Slab Completed	
24	462+810	462+813	0.003	Wall Completed	
25	462+813	462+818	0.005	Slab Completed	
26	462+970	462+991	0.021	Slab Completed	
27	462+991	462+993	0.002	Wall Completed	
28	462+998	463+053	0.055	Slab Completed	
29	463+078	463+091	0.013	Slab Completed	
30	463+098	463+145	0.047	Slab Completed	
31	463+157	463+180	0.023	Slab Completed	
32	463+180	463+182	0.002	Wall Completed	
33	463+182	463+190	0.008	Raft Completed	
34	463+205	463+207	0.002	Wall Completed	

35	470+040	470+293	0.253	Slab Completed	
36	470+300	470+352	0.052	Slab Completed	
37	470+359	470+410	0.051	Slab Completed	
38	470+420	470+458	0.038	Slab Completed	
39	470+575	470+590	0.015	Slab Completed	
40	472+700	472+720	0.020	Wall Completed	
41	472+720	472+744	0.024	Slab Completed	
42	472+753	472+800	0.047	Wall Completed	
43	472+818	472+830	0.012	Raft Completed	
44	472+840	472+860	0.020	Slab Completed	
45	472+870	472+938	0.068	Slab Completed	
46	472+944	472+949	0.005	Slab Completed	
47	472+976	473+090	0.114	Slab Completed	
48	473+105	473+133	0.028	Wall Completed	
49	473+140	473+185	0.045	Wall Completed	
50	473+192	473+220	0.028	Wall Completed	
51	473+220	473+342	0.122	Slab Completed	
52	473+342	473+380	0.038	Wall Completed	
53	473+380	473+410	0.030	Slab Completed	
54	473+496	473+518	0.022	Wall Completed	
55	474+735	474+750	0.015	Wall Completed	
56	474+765	474+880	0.115	Wall Completed	
57	474+880	474+900	0.020	Slab Completed	
58	475+255	475+325	0.070	Wall Completed	
59	480+020	480+040	0.020	Wall Completed	
60	480+040	480+095	0.055	Slab Completed	
61	480+100	480+110	0.010	Slab Completed	
62	480+110	480+126	0.016	Wall Completed	
63	480+126	480+132	0.006	Slab Completed	
64	480+233	480+238	0.005	Wall Completed	
65	480+450	480+670	0.220	Slab Completed	
66	480+670	480+860	0.190	Wall Completed	
67	480+860	480+880	0.020	Slab Completed	
68	480+880	480+885	0.005	Wall Completed	
69	480+885	481+040	0.155	Slab Completed	
70	481+075	481+100	0.025	Slab Completed	
71	481+100	481+180	0.080	Wall Completed	

72	481+400	481+500	0.100	Wall Completed	
73	481+500	481+750	0.250	Slab Completed	
74	481+805	481+825	0.020	Wall Completed	
75	481+860	481+932	0.072	Wall Completed	
76	481+932	481+940	0.008	Slab Completed	
77	481+940	481+950	0.010	Wall Completed	
78	481+950	482+420	0.470	Slab Completed	
79	482+510	482+520	0.010	Wall Completed	
80	482+520	482+876	0.356	Slab Completed	
81	482+876	482+880	0.004	Wall Completed	
82	483+060	483+155	0.095	Slab Completed	
83	483+155	483+156	0.001	Wall Completed	

Drain Status LHS

Sl.No.	Chainage		Length (Km)	Present Status	Remarks
	From	To			
1	453+200	453+230	0.030	Wall Completed	
2	453+240	453+300	0.060	Wall Completed	
3	453+310	453+355	0.045	Wall Completed	
4	453+540	453+660	0.120	Wall Completed	
5	453+720	453+820	0.100	Wall Completed	
6	453+820	453+830	0.010	Slab Completed	
7	453+840	453+850	0.010	Slab Completed	
8	453+870	453+900	0.030	Slab Completed	
9	462+450	462+540	0.090	Wall Completed	
10	462+680	462+730	0.050	Wall Completed	
11	462+735	462+745	0.010	Wall Completed	
12	462+770	462+790	0.020	Slab Completed	
13	462+860	462+935	0.075	Slab Completed	
14	462+935	462+950	0.015	Wall Completed	
15	462+950	463+010	0.060	Slab Completed	
16	463+010	463+015	0.005	Wall Completed	
17	463+030	463+330	0.300	Slab Completed	
18	463+345	463+355	0.010	Wall Completed	
19	463+370	463+630	0.260	Slab Completed	
20	463+640	463+665	0.025	Slab Completed	
21	463+670	463+710	0.040	Slab Completed	
22	463+710	463+745	0.035	Wall Completed	
23	463+780	463+870	0.090	Wall Completed	
24	463+880	463+895	0.015	Wall Completed	
25	463+905	463+920	0.015	Wall Completed	

26	463+925	463+960	0.035	Wall Completed	
27	463+965	463+990	0.025	Wall Completed	
28	464+004	464+080	0.076	Wall Completed	
29	464+085	464+205	0.120	Wall Completed	
30	464+215	464+225	0.010	Wall Completed	
31	466+170	466+190	0.020	Raft Completed	
32	466+480	466+488	0.008	Wall Completed	
33	466+488	466+493	0.005	Raft Completed	
34	466+510	466+540	0.030	Slab Completed	
35	466+550	466+560	0.010	Slab Completed	
36	466+575	466+585	0.010	Slab Completed	
37	466+595	466+605	0.010	Slab Completed	
38	466+605	466+610	0.005	Wall Completed	
39	466+610	466+620	0.010	Slab Completed	
40	466+620	466+628	0.008	Wall Completed	
41	466+628	466+670	0.042	Slab Completed	
42	466+670	466+680	0.010	Slab Completed	
43	466+700	466+705	0.005	Wall Completed	
44	466+705	466+820	0.115	Slab Completed	
45	466+830	466+835	0.005	Wall Completed	
46	466+835	466+842	0.007	Slab Completed	
47	466+850	466+970	0.120	Slab Completed	
48	466+980	467+040	0.060	Slab Completed	
49	470+000	470+010	0.010	Wall Completed	
50	470+010	470+285	0.275	Slab Completed	
51	470+302	470+340	0.038	Slab Completed	
52	470+355	470+372	0.017	Slab Completed	
53	470+380	470+430	0.050	Slab Completed	
54	470+435	470+447	0.012	Slab Completed	
55	470+520	470+545	0.025	Slab Completed	
56	470+550	470+585	0.035	Slab Completed	
57	470+590	470+630	0.040	Slab Completed	
58	470+650	470+695	0.045	Slab Completed	
59	472+710	472+735	0.025	PCC Completed	
60	472+780	472+837	0.057	Wall Completed	
61	472+837	472+849	0.012	Slab Completed	
62	472+849	472+906	0.057	Wall Completed	
63	472+906	472+926	0.020	Slab Completed	
64	472+995	473+023	0.028	Wall Completed	
65	473+040	473+081	0.041	Wall Completed	
66	473+094	473+135	0.041	Wall Completed	
67	473+140	473+165	0.025	Raft Completed	

68	473+177	473+201	0.024	Wall Completed	
69	473+201	473+241	0.040	Slab Completed	
70	473+241	473+253	0.012	Wall Completed	
71	473+275	473+292	0.017	Slab Completed	
72	473+292	473+305	0.013	Wall Completed	
73	473+325	473+390	0.065	Wall Completed	
74	474+770	474+925	0.155	Wall Completed	
75	474+950	475+140	0.190	Wall Completed	
76	480+400	480+408	0.008	Wall Completed	
77	480+408	480+490	0.082	Slab Completed	
78	480+510	480+680	0.170	Slab Completed	
79	480+680	480+685	0.005	Wall Completed	
80	480+745	480+770	0.025	Slab Completed	
81	480+785	480+825	0.040	Slab Completed	
82	480+825	480+845	0.020	Wall Completed	
83	480+845	480+930	0.085	Slab Completed	
84	480+950	481+035	0.085	Slab Completed	
85	481+050	481+080	0.030	Slab Completed	
86	481+080	481+098	0.018	Wall Completed	
87	481+098	481+110	0.012	PCC Completed	
88	481+375	481+382	0.007	Slab Completed	
89	481+382	481+490	0.108	Wall Completed	
90	481+520	481+780	0.260	Wall Completed	
91	481+810	482+015	0.205	Wall Completed	
92	482+015	482+220	0.205	Slab Completed	
93	482+220	482+225	0.005	Wall Completed	
94	482+225	482+315	0.090	Slab Completed	
95	482+315	482+318	0.003	Raft Completed	
96	482+365	482+705	0.340	Slab Completed	
97	482+725	482+910	0.185	Slab Completed	
98	483+110	483+120	0.010	Slab Completed	
99	483+120	483+140	0.020	Wall Completed	

6.2. Unlined Drain is to be constructed at all other locations as per Manual.

6.3. Median Drain is also to be provided as per Manual and Site Requirement.

7. Design of structures

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the manual and the existing design of partially completed structures. These together shall conform to the cross-sectional features and other details.

7.1.2 Width of the carriageway of new bridges and structures shall be as follows:-

All new structures shall be minimum carriageway as per Manual Fig. 7.2 and fig. 7.3

7.1.3 The following structures shall be provided with footpaths:

Sl. No	Bridge at Km	Utility service to be carried	Remarks
All new bridges/Bridges proposed to be widened shall have provisions for footpath			

7.1.4 All bridges shall be high-level bridges

7.1.5 Utility services to be carried over the structures

The following structures shall be designed to carry utility services specified in the table below:-

Sl. No	Bridge at Km	Utility service to be carried	Remarks
All new bridges/Bridges proposed to be widened shall have provisions for utility services to be carried over			

7.1.6 Cross - section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in section 7 of the Manual.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches.

7.2.2 Reconstruction of existing culverts.

The existing culverts at the following locations shall be re-constructed as new culverts:-

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Recommendation	Proposed span Arrangement (m)	Over all Width in (m)
1	453+900	453+895	HP	Reconstruction	1x 1.2 m dia	4 - lane
2	454+100	454+096	HP	Reconstruction	1x 1.2 m dia	4 - lane
3	454+856	454+856	HP	Reconstruction	1x1.2 m dia	4 - lane
4	455+043	455+039	HP	Reconstruction	1x 1.2 m dia	4 - lane
5	455+757	455+756	HP	Reconstruction	1x 1.2 m dia	4 - lane
6	455+788	455+786	HP	Reconstruction	1x 1.2 m dia	4 - lane
7	456+133	456+133	HP	Reconstruction	1x 1.2 m dia	4 - lane
8	456+496	456+496	HP	Reconstruction	1x 1.2 m dia	4 - lane
9	456+809	456+809	HP	Reconstruction	1x 1.2 m dia	4 - lane
10	456+841	456+841	HP	Reconstruction	1x 1.2 m dia	4 - lane
11	457+260	457+254	HP	Reconstruction	1x 1.2 m dia	4 - lane
12	458+735	458+700	HP	Reconstruction	1x 1.2 m dia	4 - lane
13	459+190	459+147	HP	Reconstruction	1x 1.2 m dia	4 - lane
14	459+260	459+217	HP	Reconstruction	1x 1.2 m dia	4 - lane
15	459+768	459+725	HP	Reconstruction	1x 1.2 m dia	4 - lane
16	460+007	459+956	HP	Reconstruction	1x 1.2 m dia	4 - lane
17	460+157	460+107	HP	Reconstruction	1x 1.2 m dia	4 - lane
18	460+327	460+277	HP	Reconstruction	1x 1.2 m dia	4 - lane
19	460+455	460+405	HP	Reconstruction	1x 1.2 m dia	4 - lane
20	460+596	460+546	HP	Reconstruction	1x 1.2 m dia	4 - lane
21	460+718	460+667	HP	Reconstruction	1x 1.2 m dia	4 - lane
22	460+887	460+836	HP	Reconstruction	1x 1.2 m dia	4 - lane
23	461+305	461+251	HP	Reconstruction	1x 1.2 m dia	4 - lane

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Recommendation	Proposed span Arrangement (m)	Over all Width in (m)
24	461+577	461+525	HP	Reconstruction	1x 1.2 m dia	4 - lane
25	461+811	461+757	HP	Reconstruction	1x 1.2 m dia	4 - lane
26	461+926	461+872	HP	Reconstruction	1x 1.2 m dia	4 - lane
27	462+090	462+032	HP	Reconstruction	1x 1.2 m dia	4 - lane
28	462+285	462+228	HP	Reconstruction	1x 1.2 m dia	4 - lane
29	462+610	462+550	HP	Reconstruction	1x 1.2 m dia	4 - lane
30	470+472	470+460	Box	Reconstruction	1x 1.2 x 1.2	4 - lane
31	472+953	472+953	Box	Reconstruction	1 x 1.5 x 1.5	4 - lane
32	480+701	480+732	Box	Reconstruction	1 x 1.5 x 1.0	4 - lane

Status of Culvert (Reconstruction) completed/Partially completed as per Schedule A

Culvert (Reconstruction) Work partially complete and to be completed up to final stage

Sr. No.	Existing Chainage	Design Chainage	Site Chainage	Proposed Type of Structure	Recommendation	Proposed span Arrangement (m)	Over all Width in (m)	Status
1	454+100	454+096	454+098	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
2	454+856	454+856	454+857	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
3	455+043	455+039	455+042	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
4	455+757	455+756	455+756	HP	Reconstruction	1x 1.2 m dia	4-lane	Up to Pipe laying & Cradle Concrete Completed in R/S except Head Wall & Protection Work
5	455+788	455+786	455+786	HP	Reconstruction	1x 1.2 m dia	4-lane	Up to Pipe laying & Cradle Concrete Completed in R/S except Head Wall & Protection Work
6	456+133	456+133	456+130	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
7	456+496	456+496	456+492	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
8	456+809	456+809	456+808	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
9	456+841	456+841	456+840	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
10	457+260	457+254	457+254	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
11	458+735	458+700	458+703	HP	Reconstruction	1x 1.2 m dia	4-lane	Excavation work completed in R/S
12	459+190	459+147	459+150	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work

13	459+260	459+217	459+185	HP	Reconstruction	1x 1.2 m dia	4-lane	Up to Pipe laid & Cradle Concrete Completed in R/S except Head Wall & Protection Work
14	459+768	459+725	459+729	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
15	460+007	459+956	459+960	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
16	460+157	460+107	460+109	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
17	460+327	460+277	460+277	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head wall in R/S except Protection work
18	460+455	460+405	460+408	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head wall in R/S except Protection work
19	460+596	460+546	460+551	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head wall in R/S except Protection work
20	460+718	460+667	460+669	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
21	460+887	460+836	460+839	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
22	461+305	461+251	461+251	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed in R/S except Protection work
23	461+577	461+525	461+526	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Pipe laid &craddle concrete in R/S except Head wall & Protection work
24	461+811	461+757	461+761	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head wall in R/S except Protection work
25	461+926	461+872	461+873	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed up to Head Wall Ist Lift in R/S except protection work.
26	462+090	462+032	462+031	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head Wall B/S except protection work.
27	462+610	462+550	462+553	HP	Reconstruction	1x 1.2 m dia	4-lane	Completed upto Head Wall L/S except protection work.
28	470+472	470+460	470+467	Box	Reconstruction	1x1.2x1.2	4-lane	Completed upto Slab in B/S except Parapet wall, Return wall & Protection work
29	472+953	472+953	472+959	Box	Reconstruction	1x1.5x1.5	4-lane	Completed upto Slab in R/S except Retaining wall, Parapet wall, Return wall & Protection work

30	480+701	480+732	480+731	Box	Reconstruction	1x1.5x1.0	4-lane	Completed upto Slab in R/S except Parapet wall, Return wall & Protection work

7.2.3 Widening of Existing Culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Recommend ation	Proposed (m) span Arrangement	Overall Width in m
1	453+171	453+171	Slab	Retained &Widened	1x1.9x1.6	4- lane
2	463+597	463+536	Slab	Retained &Widened	1x1.5x2.0	4- lane
3	464+649	464+586	Slab	Retained &Widened	1x1x1.5	4- lane
4	465+570	465+507	Box	Retained &Widened	1x1.5x1.5	4- lane
5	465+965	465+902	Box	Retained &Widened	1x1.5x1.5	4- lane
6	467+234	467+206	Box	Retained &Widened	1x1.5x1.5	4- lane
7	469+018	469+002	Box	Retained &Widened	1x1.5x1.5	4- lane
8	469+684	469+667	Slab	Retained &Widened	1x3.0x1.5	4- lane
9	470+827	470+815	Slab	Retained &Widened	1x3.0x2	4- lane
10	471+116	471+100	Box	Retained &Widened	1x1.5x1.5	4- lane
11	472+351	472+351	Slab	Retained &Widened	1x6.0x3.0	4- lane
12	473+543	473+543	Box	Retained &Widened	1x1.5x1.5	4- lane
13	473+934	473+934	Box	Retained &Widened	1x3.0x5.0	4- lane
14	474+604	474+614	Slab	Retained &Widened	1x3.0x2.5	4- lane
15	475+328	475+338	Slab	Retained &Widened	1x3.0x4.0	4- lane
16	476+515	476+530	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
17	476+900	476+916	Slab	Retained &Widened	1x3.0x2.5	4- lane

Sr. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Recommend ation	Proposed (m) span Arrangement	Overall Width in m
18	477+175	477+193	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
19	477+276	477+295	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
20	477+543	477+563	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
21	478+562	478+590	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
22	478+953	478+980	Slab	Retained &Widened	1x3.0x3.0	4- lane
23	479+110	479+136	HP	Retained &Widened	2 x 1.2 m dia	4 - lane
24	481+693	481+821	Box	Retained &Widened	1x1.5x2.0	4- lane
25	483+775	483+866	Box	Retained &Widened	1x3.0x2.0	4- lane
26	484+856	484+931	Slab	Retained &Widened	1x0.9x3.0	4- lane
27	485+571	485+646	Slab	Retained &Widened	1x6.0x4.0	4- lane
28	487+871	487+920	Box	Retained &Widened	1x1.5x1.5	4- lane

Culvert (Retained & Widened) Work partially complete and to be completed up to final stage

Sr. No.	Existing Chainage	Design Chainage	Site Chainage	Proposed Type of Structure	Recommendation	Proposed span Arrangement (m)	Over all Width in (m)	Status
1	453+171	453+171	453+169	Box	Retained &Widened	1x1.9x1.6	4-lane	Completed upto Parapet wall in B/S except Protection work
2	463+597	463+536	463+543	Box	Retained &Widened	1x1.5x2.0	4-lane	Completed upto Slab in B/S except Parapet wall & Protection work
3	464+649	464+586	464+586	Box	Retained &Widened	1x1.0x1.5	4-lane	Completed upto Slab in R/S except Parapet wall & Protection work
4	465+570	465+507	465+514	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab in R/S except Parapet wall & Protection work
5	465+965	465+902	465+908	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab in R/S. Parapet wall &Retaining completed in Jhanji end except protection work.

6	467+234	467+206	467+212	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab in B/S except Parapet wall & Protection work
7	469+018	469+002	469+009	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab, Parapet wall & Retaining wall in R/S except Protection work
8	469+684	469+667	469+665	Box	Retained &Widened	1x3.0x1.5	4-lane	Completed upto Slab in R/S except Parapet wall & Protection work
10	470+827	470+815	470+822	Box	Retained &Widened	1x3.0x2	4-lane	Completed upto Slab, Parapet wall in R/S except Retaining wall, Protection work
11	471+116	471+100	471+108	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab in B/S except Protection work
12	472+351	472+351	472+358	Box	Retained &Widened	1x6.0x3.0	4-lane	Completed upto Slab, Parapet wall & Retaining wall in R/S except Protection work
14	473+543	473+543	473+553	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
15	473+934	473+934	473+951	Box	Retained &Widened	1x3.0x5.0	4-lane	Completed upto Slab in B/S except Protection work
16	475+328	475+338	475+347	Box	Retained &Widened	1x3.0x4.0	4-lane	Completed upto Slab in B/S except Protection work
17	476+515	476+530	476+537	HP	Retained &Widened	2x1.2m dia	4-lane	Completed upto Head Wall B/S except protection work.
18	476+900	476+916	476+924	Box	Retained &Widened	1x3.0x2.5	4-lane	Completed upto Slab & Parapet wall in B/S except Protection work
19	477+175	477+193	477+201	HP	Retained &Widened	2x1.2m dia	4-lane	Completed upto Pipe laid &craddle concrete in L/S except Head wall & Protection work Completed upto Head Wall R/S except protection work.
20	477+543	477+563	477+570	HP	Retained &Widened	2x1.2m dia	4-lane	Completed upto Head Wall B/S except protection work.

21	478+562	478+590	478+596	HP	Retained &Widened	2x1.2m dia	4-lane	Completed upto Head Wall B/S except protection work.
22	478+953	478+980	478+987	Box	Retained &Widened	1x3.0x3.0	4-lane	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
23	479+110	479+136	479+145	HP	Retained &Widened	2x1.2m dia	4-lane	Completed upto Head Wall B/S except protection work.
24	481+693	481+821	481+829	Box	Retained &Widened	1x1.5x2.0	4-lane	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
25	483+775	483+866	483+879	Box	Retained &Widened	1x3.0x2.0	4-lane	Completed uptoSlab in L/S except Protection work Completed upto Slab & Parapet wall in R/S except Protection work
26	484+856	484+931	484+940	Box	Retained &Widened	1x0.9x3.0	4-lane	Completed upto Slab & Parapet wall in B/S except Protection work
27	485+571	485+646	485+656	Box	Retained &Widened	1x6.0x4.0	4-lane	Completed upto Slab, Parapet wall & Return wall in L/S except Protection work Completed upto Slab, Parapet wall wallin R/S except Protection work
28	487+871	487+920	487+935	Box	Retained &Widened	1x1.5x1.5	4-lane	Completed upto Slab, Parapet wall & Return wall in L/S except Protection work Completed upto Slab in R/S except Protection work

7.2.4 Additional new culverts shall be constructed as per particulars given in the table below:

Sl. No.	Design Chainage (km)	Proposed Type of culvert	Span Arrangement No. x Length /No. x Dia(m)	Overall Width
1	454+535	HP	2x1.2m dia	4-lane
2	458+538	HP	1x1.2m dia	4-lane

3	471+990	BC	2.0x2.0	4-lane
4	475+760	BC	2.0x2.0	4-lane
5	479+705	BC	2.0x2.0	4-lane
6	484+250	BC	2.0x2.0	4-lane
7	485+260	HP	2x1.2m dia	4-lane
8	487+370	HP	2x1.2m dia	4-lane
9	489+300	HP	2x1.2m dia	4-lane
10	490+300	HP	2x1.2m dia	4-lane
11	490+670	HP	2x1.2m dia	4-lane

7.2.5 Repairs/replacement of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

As per site condition,

Repairs/replacement of railing/parapets and any other defects noticed at the time of construction shall be undertaken by the contractor for all the retained culverts along with repair/construction of flooring and protection works.

7.2.6 Floor protection works shall be as specified in the relevant IRC Codes and Specification.

7.2.7 In case of culverts proposed for widening / repair as per details in Clause 7.2.3 above, the same shall be re-constructed if the design shows that these are unsafe for design loads. No change of scope shall be considered in such cases.

7.3 Bridges

7.3.1 Existing bridges to be re-construction/widened/Repairs

i) The existing bridges at the following locations shall be re-constructed as new structures.

a) Major Bridges

Nil

b) Minor Bridges

Sl. No.	Existing Chainage	Design Chainage	Proposed Structure configuration	Proposed span arrangement (No. x L)
1	457+375	457+375	New 4-Lane Bridges	1x18.01m
2	480+320	480+360	New 4-Lane Bridges on MCW+ New 2-lane Bridges on service road on both	1x14.21m

			side	

iii) The following narrow bridges shall be widened/Repairs and Strengthen:

a) Major Bridges

Sl. No.	Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of Repair
				Foundation	Sub structure	Super structure	
1	458+150	11.40	21.6+29.8+21.6 =73.0m	Well	RCC walls type	RCC box girder	Wearing coat, Bearings, Railings Drainage spout and expansion gap need repair
2	488+450	11.40	33.5+38.55+33.5 =105.55m	Well	RCC walls type	RCC box girder	Wearing coat, Bearings, Railings Drainage spout and expansion gap need repair

Note: Widening of major bridges is not applicable due to RCC Box Girder type superstructure. However and strengthening of existing major bridges.

b) Minor Bridges

Sl. No.	Design Chainages	Width (m)	Span Arrange--ment	Type of structure			Details of widening	Remarks
				Found-ation	Sub structure	Super Structure		
1	455+150	7.9	2 x 8.0 = 16.00 m	Open	RCC Wall	Solid Slab	Widened to the required overall Width (12m)	
2	455+370	7.9	1 x 6.1 = 6.1m	Open	RCC Wall	Solid Slab	Widened to the required overall Width (12m)	
3	459+525	7.9	1 x 8.7 = 8.7 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	
4	468+155	7.9	2 x 7.2 = 14.4 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	
5	471+480	7.9	1 x 10.62 = 10.62m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	
6	474+275	7.9	2 x 10.0 = 20.00 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12)	
7	476+280	7.9	1 x 6.3 = 6.3 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	
8	478+012	7.9	2 x 7.3 = 14.6 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	

Sl. No.	Design Chainages	Width (m)	Span Arrange--ment	Type of structure			Details of widening	Remarks
				Found-ation	Sub structure	Super Structure		
9	481+280	7.9	2 x 7.5 = 15.0 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	
10	482+950	7.9	2 x 7.5 = 15.0 m	Open	PCC Wall	Solid Slab	Widened to the required overall Width (12m)	

Note: Deck slab, approach slab, substructure and foundation are required to be widened to the required overall width (12m) for all above minor bridges.

7.3.2 Additional new bridges

New bridges at the following location on the Project Highway shall be constructed.

Major bridges:

Sl. No.	Name of Bridges	Existing Chainage	Design Chainage	Proposed span arrangement (No.x1)	Remarks
1	Bhogdoi River	458+200	458+150	20.81+27.648+20.81	The work already constructed is shown in Sch-A. Balance activities include requisite rectification of the completed works and all the balance works required to complete the New 2 lane Major Bridge in all aspects including River Training works if required as per site.
2	Jhanji River	488+400	488+450	31.348+36.398+31.348	

Minor Bridges:

Sl. No.	ExistingChainage	Design Chainage	Span arrangement	Remarks
1	455+150	455+150	1 x 15.21 m	The work already constructed is shown in Sch-A. Balance activities include requisite rectification of the completed works and all the balance works required to complete the New 2 lane Minor Bridge in all aspects
2	455+370	455+370	1 x 6.0m	
3	459+570	459+525	1 x 8.28m	
4	468+175	468+155	1 x 13.61m	
5	471+495	471+480	1 x 10.2m	
6	474+270	474+275	1 x 19.21m	
7	476+260	476+280	1 x 6.0m	
8	478+000	478+012	1x 13.81m	
9	481+150	481+280	1 x 14.21m	
10	482+850	482+950	1 x 14.21m	

7.3.3 The railing of existing bridges shall be replaced by crash barriers at the following locations:

Sl. No.	Location at km	Remarks
"As per site condition and where ever technically feasible"		

7.3.4 Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follow:

Sl. No.	Location at km	Remarks
In all the retained bridges which are proposed for widened, railing/parapets shall be replaced.		

7.3.5 Drainage system for bridges decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual.

7.3.6 Structure in marine environment

Nil

7.4 Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual.

7.4.2 Road over bridges(road over rail) shall be provided at the following crossing, as per GAD drawing attached:

Sl. No.	Design Chainage(km)	Span arrangement/length of span in m	Remarks
		Nil	

7.4.3 Road under bridges (road under railway line)shall be provided at the following level crossings, as per GAD drawing attached:

Road under bridges

Sl. No.	Location of level crossing	Number and length of span
Nil		

7.5 Grade separated structure

The grade separated structures shall be provided at the locations at the locations and of the type and length specified in paragraphs 2.9 and 3 of this Annex-I of Sch-B.

7.6 Repairs and strengthening of structures

The existing structures to be repaired/strengthened, and the nature and extentof repairs/ strengthening required are given below:

A-Bridges

i) Major Bridges

Sl. No.	Location of Bridge(km)		Nature and extent of repairs/ strengthening to carried out
	Existing Chainage	Design Chainage	
1	457+375	457+375	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc .Repairing replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.
2	480+320	480+360	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc .Repairing replacement are required for damaged bearings, railings, expansion joints, drainage spouts and wearing coat.

ii) Minor Bridges

Sl. No	Existing Chainage	Design chainage	Details of widening
1	455+150	455+150	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
2	455+370	455+370	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
3	459+570	459+525	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
4	468+175	468+155	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
5	471+495	471+480	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
6	474+270	474+275	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
7	476+260	476+280	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
8	478+000	478+012	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
9	481+150	481+280	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual. Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)
10	482+850	482+950	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual.

			Deck slab, Approach slab, substructure and foundations are required to be widened to the required overall width (12m)

B-ROB/RUB

Sl. No.	Location of structure (km)	Nature and extent of repair/strengthening to be carried out
Nil		

C- Overpasses/ Underpasses and other structures

Sl. No.	Location of structure (km)	Nature and extent of repair/strengthening to be carried out
Nil		

7.7 List of Major Bridges and Structures

The following is the list of existing Major Bridges and Structures

Sl. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x 1)	Remarks
1	Bhogdoi River	458+200	458+150	20.81+27.648+20.81	New 2-lane bridge
2	Jhanji River	488+400	488+450	31.348+36.398+31.348	New 2-lane bridge

The following is the list of the New Major Bridges and structures:-

Sl. No	Location		Remarks
	Existing Chainage (km)	Design chainage (km)	
Nil			

8. Traffic control devices and road safety works

8.1 Traffic control devices and road safety works shall be provided in accordance with section 9 of the manual.

8.2 Specifications of the reflecting sheeting: As per the clause 9.3 of the Manual of specifications and standards.

9. Roadside furniture

Roadside Furniture shall be provided in accordance with the provision of section 11 of the Manual.

9.1 Overhead traffic signs: locations and size

5 No's overhead shall be provided excluding toll-Plaza locations.

10. Compulsory Afforestation

Compulsory / Compensatory afforestation to be carried out at locations as directed by the Authority

11. Hazardous locations

The safety barriers shall also be provided at the following hazardous locations:

Sl No.	Location stretch from (km) to (km)	LHS/RHS
This shall be provided at high embankment and at sharp curve locations.		

12.Special requirements for hill roads

Nil

13. Change of Scope

The length of structures and bridges specified herein above shall be treated as an approximate assessment. The proposed span arrangement of above structures may be changed (keeping overall length same) based on innovative design of structure, latest construction techniques and aesthetics of structures and the actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any increase in the lengths specified in this Schedule B shall not constitute a change of scope, save and except any variations in the length arising out of a change expressly undertaken in accordance with the provisions of Article 13.

14. Utility Shifting

Electrical Utility shifting partially completed & balances yet to be shifted.
PHE Utility shifting partially completed & balances yet to be shifted.

Schedule-C

(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

The Contractor shall construct the Project Facilities in accordance with the provisions of the Agreement. Such Project Facilities shall include:

a) Toll plaza[s];
b) Roadside facilities;
c) Pedestrian facilities;
d) Tree plantation;
e) Truck lay-byes;
f) Bus-boys and bus shelters;
g) Rest areas; and
h) Other to be specified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

a) Toll Plaza:

1 No. of toll plaza shall be provided at design chainage Km 468.825.
Specifications and other requirements of the toll plazas shall be strictly as per schedule "D".
Rigid pavement shall be constructed for the Toll Plaza area including the transition portion.

Road side Furniture

(i) Traffic Signs and Pavement Markings
Traffic signs and pavement marking shall include road side, overhead signs, curve mounted signs and road marking along the project highway. The locations for these provisions shall be finalised as per manual.

(ii) Concrete Crash Barrier, Metal beam crash barrier, Separators (MS railings) wherever required as per manual.

(iii) Traffic Safety Devices wherever required

(iv) Boundary Stones

(v) Hectometre/ Kilometre Stones

(vi) Traffic Blinker Signal (L.E.D) shall be provided at all At-grade junctions, median opening, schools, hospitals, police station, places of worship and institutional buildings etc.

(vii) Overhead signs: 5 Nos.(Excluding overhead signs at Toll Plaza location which are as given in Schedule D) shall be provided.

(viii) Delineators and Studs(100mmx 100mm) with reflective panels of dual prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators for night time visibility shall be provided for the entire project Highway.

b) Pedestrian Facilities

The additional pedestrians facilities in the form of guard rails, footpath, lighting etc. Shall be provided wherever required.

c) Landscaping and Tree Plantation

Landscaping of the highway shall be done on, but not limited to the following:
Median
Grade Separated intersections
Entry and Exit ramp
At grade islands of intersection locations
Toll Plaza Area

(e) **Truck Lay-byes:**Truck Lay-byes shall be provided at following locations:

Sl. No.	Design Chainage	Side
1	458.850	Left
2	490.100	Right

(f) Bus-bays and Bus Shelter: Bus-bays shall be provided locations:

Locations of Bus bays

Sl. No.	Design Chainage	Side	Name/Location

1	455.450	Both	Jorhat
2	468.400	Both	Hatigarh/Chenijan
3	480.100	Both	Teok
4	487.750	Both	Jhanji

(g) Others

1 Highway Lighting shall be provided as per schedule D(Manual of Specifications and Standard for 4-Laning of Highway) IRC:SP:84-2019). However, the lighting in built up areas shall be provided in consultation with IE/Employer.

2. Highway Patrol

The Concessionaire shall provided Highway Patrol vehicles in adequate number as per manual and this agreement.

3. Medical Aid Post: As per Article 21.

4. Cranes

The Concessionaire shall provided one mobile Cranes having the capacity to left a truck with a gross vehicle weight of 30,000(thirty thousand) kilogram and such posts shall be located at the toll plaza location in consultation with the IC/Authority.

5. Traffic Aid Post

6. ECB (Emergency Call Boxes)

ECBs (Emergency Call Boxes) with loud speaker, micro phone, activation button with LED indicating conversation, shall be housed in a vandal proof casing and operate in full to play mode in noise level of upto 95 decibels within built diagnostic features for automatic detection in case of damage by any object. Mobile communication system shall comprise the mobile radio base stations and control equipment. It shall have provision for mounted mobile set on ambulances, trains & patrolling vehicles. The system shall have the facility to connect mobile to mobile, mobile to controller, and controller to mobile along with the systems for waiting, holding and transfer of call. The system shall use pair frequencies to be allotted to the concessionaire with the approval of wireless planning & coordination (WPC), Deptt. Of Telecommunications and shall operate for full duplex mode.

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

Schedule-D
(See Clause 2.1)
SPECIFICATIONS AND STANDARDS

1. Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex-I of this Schedule-D for construction of the Project Highway:

2. Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the following documents:

Manual of Standards and Specifications for Four Laning manual published by the Indian Road Congress-IRC:SP:84-2019

Annex-I
(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for four laning of Highways (IRC: SP-84:-2019) referred to as the Manual for four laning of Highways published by IRC and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

2.1 The term "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement respectively".

2.2 Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement ,the afore said Specifications and Standards shall be deemed to be amended to the extent set forth below.

Sl. No.	Item	Clause referred in Manual	Provision as per Manual	Modified Provision
1	Typical Cross section	IRC: SP: 84-2019	Typical Cross Section	Typical Cross section shall be as per Manual

Schedule – E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

(i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

(ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfilment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

(iii) All Materials, works and construction operations shall conform to the MORTH

Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3. Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event or wilful default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

Nature of Defect or deficiency		Time limit for repair/ rectification
Roads		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade-	Temporary restoration of traffic within 24 hours; permanent restoration within 15(fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	12 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen)days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edge	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(b)	**Granular earth shoulders, side slopes, drains and culverts**	
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi- urban areas	24 (twenty four) hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro- reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every

		year
(iii)	Damaged/missing road signs requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 (twenty four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four)hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiringreplacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water andsanitary installations	24 (twenty four) hours
(g)	**[Toll Plaza]**	
(h)	**Other ProjectFacilitiesandApproach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/ caling Temporarymeasures Permanentmeasures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Foundations**	
(i)	Scouring and/or cavitation	15 (fifteen) days
(c)	**Piers, abutments, return walls and wing walls**	

(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d)	**Bearings (metallic) of bridges**	
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasingof metallic bearings once in a year
(e)	**Joints**	
(i)	Malfunctioning of joints	15 (fifteen) days
(f)	**Other items**	
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guidebunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g)	**Hill Roads**	
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

[Note: Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency beforeissuing the bidding document, with the approval of the competent authority.]

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

(i) The Contractor shall obtain, as required under the Applicable Laws, the followingApplicable Permits:

(a) Permission of the State Government for extraction of boulders from quarry;

(b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;

(c) Licence for use of explosives;

(d) Permission of the State Government for drawing water from river/reservoir;

(e) Licence from inspector of factories or other competent Authority for setting up batching plant;

(f) Clearance of Pollution Control Board for setting up batching plant;

(g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;

(h) Permission of Village Panchayats and State Government for borrow earth; and

(i) Any other permits or clearances required under Applicable Laws.

(ii) Applicable Permits, as required, relating to environmental protection andconservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

Schedule – G

(See Clauses 7.1.1, 7.5.3 and 19.2)

Annex-I

(See Clause 7.1.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

[DG(RD)&SS,

Ministry of Road Transport & Highways

Transport Bhawan, New Delhi]

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called the "Contractor") and [name and address of the authority], (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "EPC") basis, subject to and in accordance with the provisions of the Agreement

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs ..... cr. (Rupees ___ crore) (the "**Guarantee Amount**").

(C) We,..... through our branch at .....(the "Bank") have agreed to furnish this bank guarantee (*hereinafter called the* Guarantee") by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways & Infrastructure Development Corporation Ltd], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be

final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder

8. The Guarantee shall cease to be in force and effect on ****$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be

deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

Signed and sealed this…… day of ……20 …… at ……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – II

(Schedule - G)

(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

[DG(RD)&SS,

Ministry of Road Transport & Highways Transport Bhawan, New Delhi]
WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (herein after called the **"Retention Money"**) after furnishing to the Authority a Bank Guarantee for an amount equal to the proposed withdrawal.

(C) We,..... through our branch at .....(the "**Bank"**) have agreed to furnish this bank guarantee (*hereinafter called the* "**Guarantee"**) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or

otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of completion certificate specified in Clause 12.4 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

Signed and sealed this ..... day of..... , 20…… at ……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – III

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

[DG(RD)&SS,

Ministry of Road Transport & Highways Transport Bhawan, New Delhi]
WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing (@ Bank Rate) advance payment (herein after called **"Advance Payment"**) equal to 10% (ten per cent) of the Contract Price, and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. Guarantee is Rs. Amount")[3]. cr. (Rupees crore) and the amount of this cr. (Rupees crore) (the "Guarantee Amount).

(C) We,..... through our branch at .....(the "**Bank"**) have agreed to furnish this bank guarantee (*hereinafter called the* **Guarantee"**) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default

shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of completion certificate specified in Clause 12.4 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post

addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

Signed and sealed this ..... day of..... , 20……..at……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

Insert date being 90 (ninety) days after the end of one year from the date of payment of this Advance Payment to the Contractor (in accordance with Clause 19.2 of the Agreement)

(Code Number)

(Address)

NOTES:

(iii) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(iv) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Schedule-H

(See Clause 19.3)

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs XXXXX Crore

1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage Weightage
1	2	3	4
Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/Major Bridges/ Structures (excluding service roads)	**65.30%**	**A-Widening and Strengthening of existing road**	
		1) Earthwork up to top of subgrade	**1.67%**
		a) Balance Subgrade including shoulders	1.49%
		b) Rectification of existing Subgrade with shoulders	0.18%
		2) Granular Work (sub-base, base, shoulder)	**2.88%**
		a) Balance GSB & Shoulder	0.89%
		b) Balance WMM & Shoulder	1.39%
		c) Rectification of existing WMM with shoulders	0.60%
		3) Bituminous Work	**19.84%**
		a) DBM	
		DBM new construction	11.11%
		Rectification (if required) of completed DBM including kerb & shoulder	0.09%
		b) BC Layer with shoulders	8.64%
		(4) Widening and repair of culverts	**1.56%**
		a) New Culverts to be constructed excluding protection work	0.62%
		b) Protection works for New Culverts	0.56%
		c) Completion of partially constructed Culverts with protection work	0.38%
		(5)Widening and repair of Minor bridges	**1.35%**
		a) New Minor Bridge with protection work	1.14%
		b) Completion of Partially Constructed Minor Bridge with protection work	0.21%
		B-New 2-lane Realignment/ bypass	
		1) Earthwork up to top of subgrade	**6.83%**
		a) Balance Subgrade including shoulders	6.46%
		b) Rectification of existing Subgrade with shoulders	0.37%
		2) Granular Work (sub-base, base, shoulder)	**19.96%**
		a) Balance GSB & Shoulder	7.72%
		b) Rectification of existing GSB	0.10%
		c) Balance WMM & Shoulder	11.90%
		d) Rectification of existing WMM with	0.24%

		shoulders	
		3) Bituminous Work	**33.75%**
		a) DBM	
		DBM new construction	17.80%
		Rectification (if required) of completed DBM including kerb & shoulder	0.28%
		b) BC Layer with shoulders	15.67%
		(4) CC Pavement	Nil
		C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:	
		(1) Culverts	**1.18%**
		a) New Culverts to be constructed excluding protection work	0.33%
		b) Protection works for New Culverts	0.30%
		c) Completion of partially constructed Culverts with protection work	0.55%
		(2) Minor bridges	**6.49%**
		a) Minor Bridge Foundation	1.59%
		b) Minor Bridge Sub Structure	1.45%
		c) Minor Bridge Super Structure	1.61%
		d) Minor Bridge Protection work	1.58%
		e) Completion of Partially constructed Minor bridges	0.26%
		(3) Cattle/ Pedestrian underpasses	**1.00%**
		a) Foundation	0.40%
		b) Sub Structure	0.25%
		c) Super Structure	0.35%
		(4) Pedestrian overpasses	**Nil**
		(5) Grade separated structures (excluding piles)	**0.90%**
		(6) Underpasses (VUPs)	**2.59%**
		a) Foundation	0.93%
		b) Sub Structure	0.58%
		c) Super Structure	1.08%
		(7) Overpass	**Nil**
Major Bridge works and ROB/RUB	**2.74%**	**A- Widening and repairs of Major Bridges**	**15.21%**
		(1) Foundation	1.52%
		(2) Sub-structure	3.04%
		(3) Super-structure (including crash barriers etc. complete)	10.65%
		B-Widening and repair of	
		(a) ROB	Nil
		(b)RUB	Nil
		C-New Major Bridges	**84.79%**
		1) Foundation	
		a) Pile Cap Balance Work	0.81%
		2) Sub-structure Balance Work	10.69%
		3) Super- structure (including crash barriers etc. complete)	73.29%
		D- New rail-road bridges	

		ROB	Nil
		RUB	Nil
Structures (elevated sections, reinforced earth)	**6.12%**	(1) Foundation	Nil
		(2) Sub-structure	Nil
		(3) Super-structure (including crash barriers etc. complete)	Nil
		(4) Reinforced Earth	**100.00%**
		(5) Fly Ash	**Nil**
Other Engineering Works	**25.84%**	**(i) Service roads**	**49.10%**
		a) Service Road Partially completed	13.50%
		b) After completion uptoWMM	12.14%
		c) DBM	14.07%
		d) BC	9.39%
		(ii) Toll Plaza	**10.62%**
		(iii) Road side drains	**10.77%**
		a) Drain Newly to be constructed	10.36%
		b) Partially constructed Drain to be completed	0.41%
		(iv) Road signs, markings, km stones, safety devices.....	**13.48%**
		(v) Project facilities	**2.88%**
		(vi) Repairs to bridges/ structures	**Nil**
		a) Providing wearing coat	**0.23%**
		b) Replacement of bearings, joints	**Nil**
		c) Providing crash barriers	**1.56%**
		d) Other items (Junctions)	**8.51%**
		(vii) Road side plantation	**0.89%**
		(viii) Repair of protection works	**0.78%**
		(ix) Safety and traffic management during construction	**1.18%**

Note: * The above list is illustrative and may require modification as per the scope of the work.

1.3. Procedure of estimating the value of work done.

1.3.1 Road works including approaches to minor Bridges, Major Bridges and Structures (excluding service roads).

Procedure for estimating the value of road work done shall be as follows:

Table 1.3.1

Stage of payment	% Weightage	Payment procedure
A - Widening and strengthening		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of **not less than 1 (One) Km in 2 lane.**
(1) Earthwork up to top of the sub-grade	1.67%	
(2) Granular work (sub-base, base, shoulders)	2.88%	
(3) Bituminous work	19.84%	
(4) Widening and repair of culverts	1.56%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. **Payment shall be made on the completion of 2 (two) culverts for 2 lane carriageway.** **Further, 80% payment will be made for each culvert constructed in 4 lane equivalent width without protection work. Further 20% will be released after completion of Protection work**
(5) Widening and repair of minor bridges	1.35%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made **on the completion of a 2-lane minor bridge.**
B - New 2-lane realignment, bypass		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage **not less than 1 (One) Km in 2 lane.**
(1) Earthwork up to top of the sub-grade	6.83%	
(2) Granular work (sub-base, base, shoulders)	19.96%	
(3) Bituminous work	33.75%	
(4) CC pavement	Nil	
C - New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypass		
(1) Culverts	1.18%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. **Payment shall be made on the completion of 2 (two) culverts for 2 lane carriageway.** **Further, 80% payment will be made for each culvert constructed in 4 lane equivalent width without protection work. Further 20% will be released after completion of Protection work**
(2) Minor bridge	6.49%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. **Payment shall be made for each Minor Bridge on pro-rata basis stage-wise as follows:** **i)Foundation- 30 %,** **ii)Sub-Structure 25 %,** **iii) Super Structure 25 %** **iv)Protection work 20 %**

(3) Cattle / pedestrian underpass	1.00%	Cost of each cattle / pedestrian underpass shall be determined on pro rata basis with respect to the total number of cattle/ pedestrian underpasses. Payment shall be made on the completion of the number of cattle /pedestrian underpasses specified below: **Payment shall be made for each PUP in 2 lane on pro-rata basis stage-wise as follows:** **i)Foundation-40%,** **ii) Sub-Structure-25%** **iii)Super Structure-35 %**
(4) Pedestrian Overpasses	Nil	Same as for (3) above
(5) Grade separated structures	0.90%	**Payment shall be made stage-wise as follows:** **i) Foundation-20%,** **ii) Sub-Structure-35%** **iii)Super Structure-45 %**
(6) Underpasses (Vehicular)	2.59%	Cost of each vehicular underpass shall be determined on pro rata basis with respect to the total number of VUPs. Payment shall be made on the completion of the number of VUP specified below: **Payment shall be made for each VUP in 2 lane on pro-rata basis stage-wise as follows:** **i)Foundation-40%,** **ii) Sub-Structure-25%** **iii)Super Structure-35 %**
(7) Overpasses	NIL	

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows;

Cost per km= P x weightage for road work x weightage for bituminous work x (1/L)

Where P = Contract Price

L = Total length in km

Similarly, the rates per km for stages (1) , (2) & (4) above shall be worked out.

1.3.2 Major Bridge works and ROB/RUB

Procedure for estimating the value of Major Bridge works shall be as stated in table 1.3.2:

Table 1.3.2

Stage of payment	% weightage	Payment Procedure
A- Widening and repairs of Major Bridges **Foundation:** On completion of the Foundation work including Foundations for wing and return walls	1.52%	Cost of each Major Bridge (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges (widening and repairs). Payment shall be made **on completion** of each stage of a Major Bridge as per the weightage given in this table.
Sub-structure: On completion of abutments, piers up to the abutment/pier cap	3.04%	

Stage of payment	% weightage	Payment Procedure
Super-structure: On completion of the super structure in all respects including hand rails/crash barriers, wing walls, return walls, guide bunds, if any, tests on completion etc., bridge complete in all respects and fir for use.	10.65%	
B- Widening and repairs of		
(a) ROB	Nil	Cost of each ROB/RUB (widening and repairs) shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB (widening and repairs). Payment shall be made on completion of a ROB/RUB.
(b) RUB	Nil	
E- New Major Bridges		
(1) **Foundation:** On completion of the foundation work including foundations for wing and return walls.	0.81%	For Pile foundation payment shall be made on pro rata basis on completion of each foundation as follows: i) Pile Group-90% ii) Pile Cap-10%
(2) **Sub-structure:** On completion of abutments, piers up to	10.69%	Cost of each major bridges shall be determined on pro rata basis with respect to the total linear length (m) of the major bridges. Payment shall be made **on completion** of each stage of a major **bridge** in **2-lanes** as per the weightage given in this table.
(3) **Super-structure**: On completion of the super structure in all respects including hand rails/crash barriers, wing walls, return walls, guide bunds, if any, tests on completion etc., complete in all respects and fit for use	73.29%	
B- New Rail-road bridges (a) ROB (b) RUB	 Nil Nil	Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment shall be made on completion of a ROB/RUB.

1.3.3 Structures

Procedure for estimating the value of structure work shall be as stated in table 1.3.3:

Table 1.3.3

Stage of payment	% weightage	Payment procedure
(1) **Foundation**: On completion of the foundation works including foundation for wing and return walls	Nil	Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures. Payment shall be of a structure as per the weightage given in this table.
(2) **Sub-structure**: On completion of abutments, piers up to the abutment/pier cap	Nil	

(3) **Super-structure:** On completion of the Structure along with super structure, including hand rails/crash barriers, wing walls, tests on completion etc., elevated structure complete in all respects and fit for use.	Nil	
(4) **Reinforced Earth work** excluding back fill	100%	Payment shall be made on pro-rata basis on completion of 50% (fifty percent) erection of RE panels against each structure (VUP/PUP/Grade separator)
(5) Fly Ash	Nil	Payment shall be made on pro rata basis on completion 25 (twenty five) percent of total area.

1.3.4 **Other Engineering works**

Procedure for estimating the value of other engineering works done shall be as stated in table 1.3.4

Stage of payment	**% weightage**	**Payment procedure**
(i) Service roads	49.10%	Unit of measurement is linear length in km. Cost per km shall be determined on pro rata basis with respect to the total length of the service roads. Payment shall be made **completion of a stage in a length of not less than 1 Km in 2 lane. Payment shall be made stage-wise as follows:** **i)After completion upto WMM- 53.18%** **ii) DBM- 28.09%** **iii) BC-18.73%**
(ii) Toll plaza including CC pavement	10.62%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(iii) Road side drains	10.77%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 500 Mtr. in 2 lane.
(iv) Road signs, markings, km stones, safety devices.	13.48%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(v) Project Facilities a) Bus bays b) Truck lay-bus c) Rest areas d) Others	2.88%	Payment shall be made on pro rata basis for completed facilities.
(vi) Repairs to existing bridges/structures	Nil	Payment shall be made for completed items.
a) Providing wearing coat	0.23%	
b) Replacement of bearing, joints	Nil	

c) Providing crash barriers	1.56%	
d) Other items (junctions)	8.51%	
(vii) Roadside plantation	0.89%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(viii) Protection works	0.78%	
(ix)Traffic Diversion, Safety and traffic management during construction	1.18 %	Payment shall be made on prorate basis every six month.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1.1

2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Clause 19.7.

Schedule - I

(See Clause 10.2 4)

Drawings

1. Drawings

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

2. Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex-I of this Schedule-I.

Annex – I

(Schedule - I)

List of Drawings

[Note: The Authority shall describe in this Annex-I, all the Drawings that the Contractor is required to furnish under Clause 10.2.]

Schedule - J

(See Clause 10.3 2)

Project Completion Schedule

1. Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the **Scheduled Completion Date**. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **……th** day from the Appointed Date (the "**Project Milestone- I**").

(ii) Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **…..th**day from the Appointed Date (the "**Project Milestone- II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 30% (thirty per cent) of the Contract Price

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **…..th**day from the Appointed Date (the "**Project Milestone- III**").

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 60% (sixty per cent) of the Contract Price

4. **Scheduled Completion Date**

(i) The Scheduled Completion Date shall occur on the **……th** day from the Appointed Date.

(ii) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6. Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

Schedule - K

(See Clause 12.1 2)

Tests on Completion

1. Schedule for Tests

(i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.

(ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2. Tests

(i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].

(ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.

(iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.

(iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards

(v) Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

(vi) Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3. Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer or such other agency or person as it may specify in consultation with the Authority.

4. Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

5. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

Sr. No.	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
3	Strength of pavement	Falling Weight Deflectometer (FWD)	At least once a year
4	Bridges	Mobile Bridge Inspection Unit (MBU)	At least twice a year (As per survey months defined for the state basis rainy season)
5	Road signs	Retro-reflectometer	At least twice a year (As per survey months defined for the state basis rainy season)

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

Schedule - L

(See Clause 12.2and 12.4)

Completion Certificate

1 I, ... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ..... (the "Agreement"), for [construction of the ****section (km ** to km **) of National Highway No. ***] (the "Project Highway") on Engineering, ... Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the ..... day of ..... 20..... , Scheduled Completed Date for which was the ..... day of..... 20.....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation) (Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

1. Payment reduction for non-compliance with the MaintenanceRequirements

(i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

(ii) Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.

(iii) The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments on monthly basis

(i) The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	**Bridges and Culverts**	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%

S. No.	Item/Defect/Deficiency	Percentage
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

(ii) The amount to be deducted from monthly lump-sum payment for non- compliance ofparticular item shall be calculated as under:

R=P/100xMxL1/L

Where P = Percentage of particular item/Defect/deficiency for deduction

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for non-compliance for a particular item/Defect/deficiency)

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non-compliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

Schedule - N

(See Clause 18.1 1)

Selection of Authority's Engineer

1. Selection of Authority's Engineer

(i) The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

(ii) In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

The Terms of Reference for the Authority's Engineer (the "**TOR**") shall substantially conform with Annex 1 to this Schedule N.

3. Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

(i) These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specifiedpursuant to the EPC Agreement dated……. (the "**Agreement**), which has beenentered into between the [name and address of the Authority] (the "**Authority**") and (the "**Contractor**")[#] for [Two-Laning] of the ****section (km ** to km **) of National Highway No. ** in the State of *** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

(ii) The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

(i) The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

(ii) References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

(iii) The rules of interpretation stated in Clauses 1.2, 1.3 & 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

(i) The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

(ii) The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

(a) any Time Extension;

(b) any additional cost to be paid by the Authority to the Contractor;

(c) the Termination Payment; or

(d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either party for a sum exceeding Rs. 50,00,000 (Rs. Fifty lakh).

(iii) The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

(iv) The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with

the provisions of Clause 18.2.

(v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

(vi) In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. Construction Period

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

(ii) The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

(iii) The Authority's Engineer shall review and approve the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty one) days stating the modifications, if any, required thereto.

(iv) The Authority's Engineer shall complete the review and approve of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

(v) The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

(vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

(vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

(viii) The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports

and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

(ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

(x) The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

(xi) The timing of tests referred to in Paragraph 4 (ix), and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

(xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

(xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

(xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

(xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.

(xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

(xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended

works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

(i) The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

(ii) The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

(iii) The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

(iv) In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

(v) The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

(i) The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

(ii) The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

(iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

(i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2 (iv) (d).

(ii) Authority's Engineer shall -

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, in accordance with the provisions of the Agreement.

(iii) The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

(iv) The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

9. Miscellaneous

(i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

(ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.

(iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

(iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

(v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - O

(See Clauses 19.4 1, 19.6 1, and 19.8 1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) the estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;

(b) amounts reflecting adjustments in price for the aforesaid claim;

(c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;

(d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);

(e) total of (a), (b), (c) and (d) above;

(f) Deductions:

(i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;

(ii) Any amount towards deduction of taxes; and

(iii) Total of (i) and (ii) above.

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor upto the last claim:

(i) For the Works executed (excluding Change of Scope orders);

(ii) For Change of Scope Orders, and

(iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(a) the monthly payment admissible in accordance with the provisions of the Agreement;

(b) the deductions for maintenance work not done;

(c) net payment for maintenance due, (a) minus (b);

(d) amounts reflecting adjustments in price under Clause 19.12; and

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

(i) The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

(i) The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.The insurance cover shall be not less than: Rs. [*****]

(ii) The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor’s performance of this Agreement excluding:

(a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and

(b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,200 (two thousand and two hundred only)] mm for each kilometre.

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirement of maintenance mentioned in Schedule-E.